OMB Control No. 1024-0018
expiration date 03/31/2022

NRHP Listed Date: 12/11/2024

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Silver King Coalition Mine Historic District

Other names/site number: _____

Name of related multiple property listing: Historic Mining Resources of Park City, Utah

2. Location

Street & number: approximately 655 King Road

City or town: Park City State: Utah County: Summit

Not For Publication: [ ] Vicinity: [X]

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ **national** ___ **statewide** X **local**

State Historic Preservation Officer 11/4/2024

Signature of certifying official/Title Date

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

Signature of the Keeper Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply.)

Private:	X
Public – Local	
Public – State	
Public – Federal	

Category of Property
(Check only **one** box.)

Building(s)	
District	X
Site	
Structure	
Object	

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
5		buildings
1		sites
21	1	structures
		objects
27	1	Total

Number of contributing resources previously listed in the National Register N/A

6. Function or Use

Historic Functions
(Enter categories from instructions.)

INDUSTRY/PROCESSING/EXTRACTION:
industrial storage
extractive facility
processing site

Current Functions
(Enter categories from instructions.)

VACANT/NOT IN USE

7. Description

Architectural Classification
(Enter categories from instructions.)

OTHER

Materials: (enter categories from instructions.)
Principal exterior materials of the property:

Foundation: CONCRETE
Walls: METAL, STONE
Roof: METAL, WOOD SHINGLE

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The Silver King Coalition Mine Historic District encompasses a historic mine and mill complex located on 31 acres in the high alpine Woodside Gulch of the Wasatch Mountains surrounding the town of Park City, Summit County in Northern Utah. At this remote site, at an elevation of 8,281 feet, the Silver King mine operated from 1891 to 1953. The historic district is located three miles up King Road, at the head of the canyon called Woodside Gulch. The site is a vast open area surrounded by alpine coniferous and deciduous trees. With the purchase of four mine claims, underground development was facilitated with the sinking of the Silver King shaft and huge quantities of waste rock, still visible today, amassed across the site.

The historic district encompasses 28 resources in total, consisting of one site, five buildings, and 22 structures. Of these, 27 resources retain historic integrity and, although in varying states of deterioration due to long-term abandonment, contribute to the historic character of the district. The one non-contributing feature, the base structure of a high-speed ski lift, has only minimal impact on the historic integrity of the overall district.

The district is roughly divided into three sections, each with significant features readily distinguishable as associated property types that are described in the Historic Mining Resources of Park City, Utah Multiple Property Documentation Form (MPDF):

- Mine Development Site that includes the shaft, waste dump, Shaft House, Change House, Warehouse, Transformer building and substation, all located on a terrace overlooking Woodside Gulch;
- Beneficiation Structure (ore concentration mill) below at the head of Woodside Gulch;
- Mine Transportation aerial tramway that descends through the historic district to the northeast into the town of Park City.

The Silver King Coalition Mine Historic District retains a high degree of historic integrity. Much of it has been unaltered since surface operations halted in the 1950s. The historic district retains all the mine's defining features such as shaft, headframe, mill and many of the supporting buildings and structures. The industrial architecture and engineering display the evolution and incorporation of 20th Century technology and equipment necessary to keep a large-scale "Bonanza" mine productive and profitable.

Narrative Description

The Silver King Coalition Mine Historic District contains several property types described in the Historic Mining Resources of Park City, Utah MPDF: Mine Development Site, Beneficiation Structure, Mine Transportation Resource and Mine Historic District.

Table 1. Buildings, Structures, & Site Features with Corresponding Dates, Property Types

Number	Description	Date	Property Type Association	Contributing	Non-Contributing
Buildings					
B1	Shaft house	1926	Mine Development Site	X	
B2	Change House	1917	Mine Development Site	X	
B3	Warehouse	1913	Mine Development Site	X	
B4	Mill	1921	Beneficiation Structure	X	
B5	Transformer House	1920s	Mine Development Site	X	
Structures					
S1	Coal Bunker	c.1926	Mine Development Site	X	
S2	Water Tank A	c.1894	Mine Development Site	X	
S3	Water Tank B	c.1898	Mine Development Site	X	
S4	Water Tank D	1906	Mine Development Site	X	
S5	Water Tank E	1906	Mine Development Site	X	
S6	Boarding House Vault	c.1915	Mine Development Site	X	
S7	Fire Hose Shack 1	1890s	Mine Development Site	X	
S8	Fire Hose Shack 2	1890s	Mine Development Site	X	
S9	Fire Hose Shack 3	1890s	Mine Development Site	X	
S10	Fire Hose Shack 4	1890s	Mine Development Site	X	
S11	Dorr Thickener Tank	1930	Beneficiation Structure	X	
S12	Mill Water Tank	1921	Beneficiation Structure	X	
S13	Mill Fire Hose Shack 1	1900s	Beneficiation Structure	X	
S14	Mill Fire Hose Shack 2	1900s	Beneficiation Structure	X	
S15	Sampler Building Foundation Walls	1901	Mine Development Site	X	
S16	Aerial Tramway Tower 38	1901	Mine Transportation Resource	X	
S17	Aerial Tramway Tower 39	1901	Mine Transportation Resource	X	
S18	Surface Transformer Substation	1920s	Mine Development Site	X	
S19	Water Tank C (collapsed)	1906	Mine Development Site	X	

Number	Description	Date	Property Type Association	Contributing	Non-contributing
Structures					
S20	Covered Tramway	1898	Mine Transportation Resource	X	
S21	Haul Road	1891 - 1953	Mine Transportation Resource	X	
S22	Bonanza Chairlift	1997			X
Sites					
F1	Waste Dump	1891-1953	Mine Development Site	X	

Contributing Features

MINE DEVELOPMENT SITE

1. **Shaft House**[1]
   Building (B1) Photo Nos. 6 through 9
   Construction date: 1926 Contributing Resource

Exterior

After the Silver King Coalition Mines Company's mill burned to the ground in 1921, attention turned to eliminating other fire hazards at the mine site. The original 1892 wooden shaft house was demolished in 1926 and replaced by a new steel structure.[2]

Built on flat ground surrounding the shaft collar, the Shaft House is approximately 275 feet long and 50 feet wide. The concrete foundation and steel frame building houses the hoisting works, blacksmith shop and machine shop (where equipment could be manufactured or repaired). For efficiency, substantial companies, such as the Silver King, clustered their mechanical components and shops together in large shaft houses. Since the Shaft House abuts a steep, heavily wooded hill to the rear, a poured concrete knee wall extends about 4 feet tall on the south and west sides, supplemented in various places with coursed rubble stone masonry. These retaining walls are coated with cement-based plaster on the interior. The metal-frame building is clad on the exterior with corrugated metal siding and roof sheathing.

The exterior is composed of three sections:

- The imposing central, front-gabled section, rising to about 45 feet, houses the headframe. Here, miners and necessary materials entered the shaft and ore was transferred out of the shaft. The front façade features six window openings: four fixed windows (9 over 4 lites) in a row with two windows (6 over 3 lites with pivoting top sash) paired above.

[1] Comp, T. Allan. *Silver King Mining Company, Mineshaft & Main Hoist, Woodside Gulch, Park City, Summit County, UT*. Survey number: HAER UT-22-A. Historic American Engineering Record (Library of Congress).1973. The Survey identifies this building as Shaft House.
[2] "New Steel Hoisting Works for Silver King Coalition Mines Co." *Salt Lake Mining Review,* July 15, 1926.

- The long east section of the Shaft House has a monitor roof form with a row of nine clerestory windows on both the north and south sides. These clerestory windows feature two pivoting windows (3 over 2 lites), flanking middle fixed window (5 over 2 lites).
- The west section of the building is of similar height to the east section, but with a shed roof. A small "L" wing is attached to the building's west end and remnants of two metal flues extend from the roof.

The abundance of windows provided daytime illumination and ventilation to the building's interior and multi-light rolled steel windows were commonly used in the 1920s for industrial buildings. The 2015 Preservation Plan for Selected Historic Mining Resources at the Park City Mountain Resort[3] identified six main types of metal windows:

- Type 1: 3/6/3 window, with pivoting middle sash
- Type 2: Two 3/6/3 windows, with pivoting middle sash flanking fixed 4 × 5 lite window
- Type 3: Fixed 4 × 5 lite window
- Type 4: 3 × 5 lites, with pivoting middle sash of 2 × 3 lites
- Type 5: fixed 4 × 4 lite window
- Type 6: 3 × 4 lite window, likely fixed

All windows retain the original metal sashes including mullions and muntins. Most of the clear glazing has been broken or is now missing and all the main floor windows are currently covered with corrugated metal panels.

The roof is framed with a variety of metal trusses, some modified to allow the unobstructed passage of the hoist cables. Roof sheathing consists of corrugated metal panels that are attached to a series of metal purlins that are bolted to the trusses.

Historically, when the Shaft House was in operation, heat from the blacksmith shop and exhaust steam from the boiler would have prevented any significant snow accumulation during the winter on the roof or against the building. Since the building has been vacated and lacks internal heat, significant snow and ice accumulates each winter on the roof, often avalanching and piling up around the building. As a result, these new snow loads have led to the twisting and collapse of roof members and structural support. During the summer of 2022, much of the roof material was removed from the long east section to prevent snow loading and further structural damage.

Historic Integrity

Although suffering from severe deterioration, the building has not been minimally altered and retains integrity of design and much of the 1926 materials and workmanship remain. The Shaft house retains integrity of location and setting since it has not been moved and sits on the shaft collar surrounded by the waste rock dump. The nearby modern-day Bonanza chairlift does not compromise the setting. The abandoned building invokes a strong feeling of historic mining

[3] SWCA Environmental Consultants. *Preservation Plan for Selected Historic Mining Resources at the Park City Mountain Resort*. Prepared for VR CPC Holdings, Inc by SWCA Environmental Consultants, December 31,2015. SWCA Report No. 15-721. Page 64

activity especially due to the large amount of mining equipment and machinery that remains inside. Integrity of association is demonstrated through a strong sense of connectedness with the surrounding associated historic structures and objects, especially the 3-compartment shaft located inside and the nearby warehouse, change house, tramway grade and the huge Silver King Mill. Overall, the building retains a remarkably high degree of historic integrity.

Interior

Typical of an industrial structure, the building is not insulated and the interior is unfinished. The floors are bare concrete, wall and roof framing exposed and corrugated metal cladding visible. Much of the large machinery remains inside, including the original hoisting works boiler, the 1937 electric hoisting works, two hoist reels with flat rope cables. Elements in the blacksmith shop include forges and flues. The Silver King Blacksmith shop was vital to the mine operations because it manufactured hardware, maintained tools, repaired equipment, and even shoed draft animals used underground. The giant headframe still stands inside but the two double cages were removed from the shaft collar around 1997 for display at the Silver Mine Adventure Museum located at the Ontario mine.[4]

EQUIPMENT

- Hoisting works machinery with reels and flat rope cable
  Installation date: 1937
  Contributing Resource

Inside the Shaft House remains the electric hoisting machinery, including reels and flat rope cable (Figure 1). The Historic American Engineering Record states:

> The original hoist was a Corliss Engine steam driven hoist made by Bullock Manufacturing Company and installed in 1893. …Forty-four years later, in 1937, the steam engine was replaced by a 400 horsepower, 2,300 volt electric motor; and the old hoist was replaced by a new double reel plate type friction clutch machine built by Norberg Manufacturing Company.[5]

According to the mine manager at that time:

> The cost of shutting down the operations while new equipment was being installed would be enormous and consequently it was necessary to install the new apparatus with the least amount of shut-down. This was accomplished by installing a new hoist immediately to the rear of the old steam hoist. When installation was complete, the flat rope was transferred from the old reels to the new reels.[6]

[4] Richard Martinez (local miner), interviewed by Sandra Morrison. 2007.
[5] Comp. *Silver King Mining Company, Mineshaft & Main Hoist,* HAER UT-22A, sheet 2 of 4 sheets.
[6] Heitzman M.G., Manager of Mines. *Electric Power Facts, Utah Power and Light Company journal*. March 1937. as footnoted in HAER UT-22-A Written Historical and Descriptive Data.

Figure 1. The 1937 Norberg electric hoisting equipment, including the reels and flat rope remain inside the Shaft House. The two (damaged) round gauges indicate on which level the cage is located.
Source: Sandra Morrison 2024.

- Steam Boilers
  Installation date: 1893
  Contributing Resource

  The steam cylinders of the two coal fired boilers are 20 inches in diameter with a five-foot stroke and the engine could produce 1,000 horsepower. Since exhaust steam was used for heating much of the surface plant buildings, including offices and bunk houses, the steam boiler remained in place after the electrification of the hoisting works. It continued to operate for this purpose, along with providing hot water for the change house for two more decades.[7]

[7] Heitzman, *Electric Power Facts, Utah Power & Light*, as footnoted in HAER-UT-22A.

Figure 2. The two boilers located inside the Shaft House were abated for asbestos in 2023. Source: Sandra Morrison 2024.

- Headframe and Shaft
  Construction date: 1902
  Contributing Resource

Originally sunk in 1891, when the Silver King shaft was enlarged to a three-compartment shaft in 1894, a wood headframe was erected over the collar.[8] In July 1902, it was replaced with a new sixty-two-foot high steel production-class A-frame headframe. Installation required the shutdown of hoisting ore from the mine for several days, but the mill continued to operate by processing mined ore reserves.[9] This steel headframe still stands inside the Shaft House.

[8] "About the Crescent," *Park Record* , September 17, 1892.
[9] "Silver King Plant," *Park Record*, July 12, 1902.

Figure 3. The 62-foot tall headframe located in the middle section of the Shaft House. Source: Sandra Morrison 2024.

2. Change House
Building (B2) Photo Nos. 10 through 13
Construction date: 1917 Contributing Resource

Exterior

The two-story rectangular building, located 10 feet southwest of the Shaft House, was built in 1917. The concrete and steel building "entirely modern in its equipment" [10] cost $6,488. The approximately 30 feet wide by 70 feet long building sits on a poured concrete foundation and features board-formed concrete walls. The south and east walls are partially below grade, dug into the adjacent steep hillside. The corrugated metal gable roof features wood facia and eaves and the framing consists of metal trusses.

The primary façade features two entrances - a metal roll-up door and wood front door. This main entrance is centered on the front façade and capped with a raised concrete pediment highlighting the year "1917." The two side entrances are (1) a wood double door on the west side and (2) a single wood door on the east side.

Seven windows are featured on the primary façade, all are two panes high by four panes wide. Each gable end also features a large window, four panes high and five panes wide that includes

[10] "Silver King Coalition," *Salt Lake Mining Review,* May 30, 1919.

an operable middle sash two panes high and three panes wide. All the steel frame windows feature cast concrete sills.

Interior

Although the building originally housed the change rooms and showers for the miners, a 1970s agreement with the mine company, allowed Park City Ski Area to "have" the buildings.[11] All the historic fixtures associated with a mine change house, such as change baskets and lockers, were removed as the ski area adapted the building to accommodate the ski lift maintenance shop and offices. The interior was entirely remodeled, with a mezzanine floor of three offices added. The garage door was installed at that time for ingress of ski lift equipment and machinery. During contentious lawsuits filed in 1986, the ski area moved all their maintenance operations out of the historic Silver King buildings and into a new purpose built facility half a mile to the south. The Change House was abandoned at that time.

Historic Integrity

The addition of a 1970s metal roll up door does not detract from the Change House's exterior design and the concrete building amply demonstrates integrity of material and workmanship from 1917. The interior renovations have been extensive and impact the historic integrity of the building, diminishing the sense of feeling of the miners' activity that occurred inside. The location and setting in the surface plant continue to evoke the sense of mining activity and the building's connectedness to the Silver King Shaft House and mine site conveys a strong sense of association. Overall, the historic integrity of the Change House remains.

3. Stores Department building or Warehouse[12]

Building (B3) Photo Nos. 14 through 17
Construction date: 1913 Contributing Resource

The footprint of this one-and-one-half story rectangular building measures approximately 30 feet wide and 70 feet long. In 1913, the local mining journal reported "The company has just completed a new frame store house"[13]

Exterior

The foundation of the existing west half consists of concrete piers with 12 x 12-inch stringers. The wood frame building is clad entirely in corrugated metal, even covering almost all the window openings. Under the corrugated metal, the windows are two-over-two double-hung wood sash (as shown in the 1999 photograph – Figure 4). The wood frame gable roof features exposed rafter tails and standing seam metal roofing. The south side features seven window openings, one of which is uncovered and a wood door. The west-facing gable end features a

[11] "Historic Building Slated to Fall," *Park Record,* April 1, 1987.
[12] Comp. *Silver King Mining Company, Mineshaft & Main Hoist,* HAER UT-22A. The Survey identifies this building as Warehouse.
[13] "The Silver King Coalition Mines," *Salt Lake Mining Review,* November 11, 1913.

wood entry door and two window openings, one of which is uncovered. The north-facing side features five window openings, a wood door and an overhead metal roll-up door.

Figure 4. Warehouse in 1999. Source: Sandra Morrison.

Historic Integrity

During the winter of 2018-2019, the east half of the building collapsed and was then demolished in the summer of 2020, leaving only the concrete slab foundation for that section. During the winter of 2022-2023, additional significant structural damage occurred to the remaining building (see Photo No. 14).

The garage door was added in the 1970s when the building was adapted by Park City Ski Resort to house the snowmobile and snowcat vehicle maintenance department. The maintenance program moved out in the mid-1980s and the building is currently used for storage by the ski resort.

Although in a state of major deterioration and disrepair, the original location and association to the Silver King surface plant remain. However, due to the collapse and removal of the east half of the building, the design, materials and workmanship have been greatly impacted. The Warehouse still retains historic integrity in the other areas. By clearly conveying its use for storage (even serving in that capacity today), it reveals former mining related activities within the Silver King surface plant so the aspects of feeling and setting remain. The deterioration and feeling of abandonment evoke the ultimate boom-and-bust nature of mining.

4. Transformer House and Substation

Building (B5)	Photo Nos. 24 through 27
Structure (S18)	Photo Nos 29 and 46
Construction date: 1920s	Contributing Resource

Exterior

The one-and-one-half story tall Transformer House is located 600 feet northeast of the Warehouse. The rectangular building measures approximately 20 feet wide by 35 feet long. The vernacular construction of sandstone features a standing seam metal gable roof. Centered on the

front façade, the metal entry door is flanked on each side by a six-over-six double hung wood sash type window with stone sills. The west gable end also features a six-over-six double-hung wood sash window.

This stone building appears on the 1907 Sanborn map, identified as the "Oil House" so probably used to store lubricating oil for the mine's machinery. On the 1929 Sanborn map it is identified as the "Transformer House," so converted during this period to house the necessary electrical equipment. Transformer buildings, much like oil storage buildings, were deliberately located away from the rest of the surface plant in case of fire.

Interior

The Transformer House is not insulated and the interior is unfinished. The floors are bare concrete with the sandstone walls visible inside. Much of the electrical switches and equipment remain inside, although with decades of abandonment, the equipment suffers from deterioration and vandalism.

Figure 5. Switches and equipment located inside the Transformer House. Source: Sandra Morrison. 2024.

The Substation, adjacent surface Transformer House, is identified on the 1929 map as "Transformers on Ground." Here electric power was converted and distributed or "switched" to the hoisting works, the mill and underground.

Although electricity arrived at the Silver King in 1895, it merely supplied lighting for offices and boarding houses.[14] By 1911, electricity was gradually replacing steam power.[15] The Silver King

[14] "Zinc Ores Wanted," *Park Record,* November 11, 1923.
[15] Electric power was brought into Park City at 11,000 volts and stepped down to 6,600 volts at the Daly-Judge property in lower Empire Canyon. From there, it was transmitted to the Silver King site.

surface Substation stepped incoming power down to 440 volts for use in the mill, sampler and shops and down to 250 volts direct-current for use underground. "The new electric equipment is giving good service and greatly facilitates the underground handling of ore and other materials."[16]

Historic Integrity

The sandstone on the lower section of the building is lighter in color and is made up of square cut ashlars with a natural finish set without courses or raked mortar joints. The upper walls include much darker stones set in irregular and less carefully crafted courses with the mortar joints uneven and sloppily applied.[17]

This Transformer House is in good condition, possessing integrity of materials, workmanship and design typical of 1900-1920s construction. In their original location and set apart from the other surface plant buildings, both the Transformer house and surface substation convey the sense of mining support activities at the Silver King surface plant from the early twentieth century and retain their integrity of location, setting, association and feeling. The substation suffers from long-term neglect, vandalism and severe deterioration but still conveys the sense and feeling of historic industrial activity.

5. Water tanks A & B

Structure (S2 & S3) Photo No. 29 through 32
Construction date: 1894-1898 Contributing Resource

Two wood water tanks are located about 900 feet above and east of the Shaft House, overlooking the Silver King Coalition Mine site. The construction dates for the two tanks are likely between 1894 and 1898.[18] Situated on a terrace cut into the steep slope, the two 50,000-gallon tanks are almost identical, each approximately 15 feet in diameter and sit directly on grade. The circular walls are constructed of vertical wood planks that narrow gradually inward toward the top and are bound by numerous exterior metal bands, measuring from 2 ½ to 3 ½ inches wide. Each tank is capped by an octagonal conical roof clad with wood shingles with eaves enclosed by a wood fascia and soffit. None of the walls have openings, however, projecting from each roof are two wood-shingled dormers featuring doors, not windows, on the east and west sides of each tank

[16] "The Great Silver King," *Salt Lake Mining Review,* March 30, 1911.
[17] Park City Municipal Corporation and Preservation Solutions, *Historic Site Form – Historic Site Inventory of Silver King Mine Site – Transformer House*, 2010, 40.
https://www.parkcity.org/home/showpublisheddocument/4354/635724909559570000
[18] The interpretive marker onsite states the tanks were built in 1894 and 1906 and were fed by a pipe from Shadow Lake. In 1894, the Silver King began development of a pipeline and water system from Shadow Lake for steam and culinary purposes ("Mining Matters," *Park Record,* December 8, 1894). The pipeline was disputed in 1895 and removed. The Silver King discovered the problem when the water in the tank began to run low ("Fight for Water," *Park Record,* July 20, 1895. On September 9,1898, the Park Record reported the Silver King had "just put in a new storage tank for fire purposes" ("Park Float," *Park Record,* September 23, 1898). The 1900 Sanborn Fire Insurance map notes that two 50,000 gal tanks are located north and above of the boarding house so the construction dates for the two tanks are likely 1894 and 1898.

that provided access to the tank's interior from the roof. Both tanks retain their painted wood gauge, originally used to measure the water level.

Water filled the tanks from underground pipes and emptied via a pipe and valve hardware still visible at ground level on the east side of each tank. The two tanks are also connected to each other by a pipe just below the roof line. This pipe allowed water to overflow from one tank into the other, preventing water loss or overflow waste.

Figure 6. Metal bands with new closure hardware and drainpipe/valve on Water Tank A. Source: Sandra Morrison. 2024

Historic Integrity

Both water tanks were carefully repaired and stabilized in 1994. At this time, the tanks stood intact with most of the historic material surviving. Stabilization efforts focused on adding an engineered internal structure to each. Since the tanks no longer contained water, this work prevented any potential for inward collapse. The stabilization work was carried out in a manner that used appropriate materials and did not compromise appearance or the historic workmanship of either water tank. The tanks retain integrity of materials since sympathetic materials were used during the repair, although some new metal hardware was welded on to each end of the broken original metal bands to provide a means of adjusting and tightening (Figure 6). The tanks retain integrity of location and setting to the Silver King surface plant and the feeling and association of historic mining activity remains.

6. Water tanks C, D & E

Structure (S4 & S5)	Photo No. 33
Structure (S19)	Photo No. 48
Construction date: 1906	Contributing Resource

These three water tanks are located 500 feet southeast of the Transformer House and about 40 feet higher in elevation. All three appear on the 1907 Sanborn fire insurance map so were possibly constructed about 1906. The 1929 Sanborn map also shows the three water tanks and indicates they were fed through an underground 8" water pipe 2,600 feet long, pressurized by an electric pump from the Alliance Tunnel (located in Empire Canyon). The map indicates the water supplied the needs of the mill located on the opposite hill.

Although these tanks are much larger than water tanks A&B (holding about 100,000 gallons each), the construction method is similar. The tanks are comprised of mitered 2x vertical redwood timber siding at the perimeter with steel bands holding the framing in place. Each roof is a wood framed hexagonal shaped wood shingle configuration one gabled dormer (with a door instead of a window to provide interior access).

Historic Integrity

The eastern most tank C has completely collapsed with only the foundation and wood floor remaining and so is identified as a contributing historic feature. With this recent collapse, the design, materials and workmanship of Water Tank C has been greatly impacted, but as a ruin retains historic integrity in the areas of location, setting, feeling and association. Since this ruin remains in its original location, Water Tank C offers a strong sense of connectedness and association with Water Tanks D & E, and the feeling of historic mining activity remains.

Tanks D & E also retain integrity of location, setting, feeling and association. These two tanks were repaired and stabilized from 2018 through 2020 in a manner that did not change the appearance of either structure and used appropriate materials so did not compromise the integrity aspects of design, materials and workmanship. (Figure 7 & 8). The following Executive Summary was provided by the structural engineer engaged for the project:

> The structures have been exposed to the weather, lateral and vertical snow pressure for many years and many of the structural components were observed to be in various stages of deterioration. Shingles were damaged or missing, some of the roof framing had failed, and the walls were compromised and were listing due to the failure of some of the steel rods holding it together.
>
> It was apparent that action needed to be taken to preserve these significant structures. Repairs made in 2017 & 2018 are as follows:
>
> 1. The roof structure was strengthened by placing a new steel center support in which bracing was secured to support the existing rafters.
> 2. An innovative approach of placing wood framed horizontal "cross bow" supports between center support and the exterior walls was incorporated to help stabilize the wood framed walls. The supports apply pressure to the walls like the water that once existed and applied this pressure.
> 3. Some deteriorated and failed timber members were removed and replaced with new of comparable sizes.

4. Existing tie rods encompassing the perimeter of the structure were re-aligned and tightened to help keep the structural walls plumb.
5. The main support timbers and existing posts were then anchored together using steel side plates and lag screws. This was done to help eliminate any future movement within the structure and for enhanced performance in resisting wind and seismic loading.
6. A new wood shingle roof was then installed.[19]


Figures 7 & 8. Two images of Water Tanks D & E before stabilization work.
Source: Friends of Ski Mountain Mining History and Lance Kincaid. 2019.

7. Boarding House vault
Structure (S6) Photo No. 32
Construction date: c.1915 Contributing Resource

The Park City Municipal Historic Sites Inventory for the Silver King records observes:

> The small concrete structure is approximately 10' square with a gable roof. The door is steel and the gable roof is not likely original to the structure. The vault is tucked into the hillside where a large boarding house used to sit. The boarding house, now known as the Mid-Mountain Lodge, was moved from here to its current location a half-mile away in 1987. The vault was attached to the boarding house by a 15' wood frame passage that extended east to meet the boarding house. The boarding house appears with various interior space configurations in the 1900 Sanborn Insurance map, but the vault does not appear on the map until 1929… The building was built as an accessory structure attached to the site's boarding

[19] Richards, Jonathan. *Historic Silver King Water Tanks Executive Summary of Stabilization Repairs.* Calder Richards Consulting Engineers. 2024.

house so it reflects its utilitarian use. The distinctive elements are its lack of ornamentation, utilitarian form and basic materials—concrete and steel.[20]

Historic Integrity

Since the boarding house was moved two miles south of the Silver King Coalition Mine Historic District, the Boarding House vault is the only extant structure in the district that represents Mine Housing Buildings at this site. Presumably, the cash payroll for miner's was kept here. Therefore, the small structure contributes to the overall historic integrity and understanding of the Silver King's operations. Mine Housing Buildings are scarce and disappearing historic mining resources in Park City. The concrete, fireproof vault is associated with the housing of miners at the Silver King, specifically the boarding houses, that served as a base for leisure, socializing and cultural diversity among the various ethnicities employed here. While aspects of setting, feeling and association have been greatly impacted, the vault still retains historic integrity in the areas of location, workmanship, design and materials.

8. Fire Hose Shacks 1, 2, 3 & 4

Structure (S7, S8, S9, S10) Photo Nos. 34 through 37
Construction date: 1890s Contributing Resource

Three very small wood structures, approximately five feet wide by four feet deep, are located south and behind the Shaft House, set on the hillside above a dirt mine access road. A fourth slightly larger shack is located adjacent to the east end of the Shaft House. These wood frame structures have no foundation but sit on wood sill plates or beams laid directly on grade. They are clad in board-and-batten siding and painted red. Each has a gable roof form with wood shingle roofs and painted wood fascia. None of the structures are insulated and all the framing, rafters and roof sheathing are exposed on the inside. The three smaller structures each have a single door opening with trim painted white. Only the middle structure retains its door, on which a large number "2" is stenciled in white. The western most Fire Hose Shack is accessed by a wood ladder that is bolted to a small front porch.

The fourth structure is larger, a gable-fronted saltbox shape, measuring approximately six feet deep by eight feet wide and about 10 feet tall. On the front façade are two door openings of different heights, accessing two interior spaces that are separated by a wood wall.

Historic Integrity

Although the Fire Hose Shacks are minor structures and in poor condition, these delightful sheds convey a rough-and-ready picture of the fire suppression efforts at the Silver King site. Fire was not an uncommon occurrence at mine surface plants as demonstrated by the mill fire at the Silver King in 1921. Except for natural deterioration, all the shacks remain unaltered and retain integrity of design, materials and workmanship -- probably designed and constructed by the

[20] Park City Municipal Corporation and Preservation Solutions, *Historic Site Form – Historic Site Inventory of Silver King Mine Site – Boarding House Vault*. 2010, 10.
https://www.parkcity.org/home/showpublisheddocument/4354/635724909559570000

carpenters and miners who worked at the Silver King in the early 20th century. Some fire suppression equipment remains in each shack, including pipes, shut off valves, fire hoses and fire hydrants. The four shacks retain a high degree of historic integrity in all aspects of location, feeling and association, nestled along the mine road behind or adjacent to the Shaft House. With abandonment, shrubs and trees have grown up along the mine access road, diminishing the setting of the industrial nature of the road and the small buildings.

9. Coal Bunker

Structure (S1) Photo No. 28
Construction date: c. 1926 Contributing Resource

On the southeast corner of the Shaft House is a large coal bin that stored coal for the Blacksmith Shop. Due to the immense weight of the coal, the bin is built from heavy timbers. There are no wall openings, so probably it was filled from above, accessed using the (now abandoned and overgrown) mine road on the hillside above. The Coal Bin appears on the 1929 Sanborn Insurance Map as a free-standing structure so was probably constructed at the same time as the Shaft House in 1926.

Historic Integrity

Historic images from HAER UT-22-A-A (Figure 9) show the bin crowned with wood-frame gable-roof structure and all clad in corrugated metal. The upper half of the coal bunker has since been lost.

Figure 9. Coal Bin on left, 1972. Source. HAER UT-22-A-A.

Since large mine surface plants consumed high volumes of fuel, they almost always featured substantial bins for coal. Although the top portion of the coal bunker is missing and the feature is deteriorating, it retains original materials and integrity of workmanship and design, probably designed and built by miners and carpenters working at the Silver King in the late 1920s. The

structure reveals the fuel requirements to keep the blacksmith shop and the surface plant operating so conveys historic significance in the aspects of location, feeling, and setting. Given the coal bin's proximity to the Shaft House and particularly the area of the blacksmiths shop, it holds a high degree of integrity in the aspect of association.

10. Waste dump
Site (F1) Photo No. 47
Construction date: 1891-1953 Contributing Resource

The Silver King Mine site is surrounded by thousands of tons of limestone and lime-quartz rock, brought to the surface and discarded in order to further the mine's underground development and access ore deposits. As the underground workings expanded, the above-ground surface dump grew. Miners dumped the waste rock away and downslope from the shaft into Woodside Gulch, then graded it flat to maintain and expand the above ground working surface. Some of the later site development (such as the substation and Warehouse) sits on this consolidated overburden.

Historic Integrity:
This highly visible feature is an essential part of the mining landscape, representing the extraction process of the Silver King's mining system. The basic form of the waste dump remains intact and essentially unaltered retaining a high degree of integrity of location and workmanship. Some low vegetation has grown on portions of the dump although considerable areas of bare material are exposed. The base of the Bonanza Chairlift sits on a portion of the waste dump. These intrusions compromise the aspect of setting but overall do not substantially detract from the historic integrity of the dump and the feeling of an abandoned industrial property persists. The dump provides the visible association and connectedness with the Silver King surface plant buildings and structures and it remains a contributing element of the historic district.

BENEFICIATION (MILL) STRUCTURE

1. Ore Concentration Mill
Building (B4) Photo Nos. 18 through 23
Construction date: 1921 Contributing Resource

The 1,000-ton capacity Silver King Ore Concentration Mill is located 875 feet northeast of the Shaft House. The location of the huge building is especially striking given the dramatic descent from the Shaft House and other surface plant buildings. Typical of most concentration mills, the Silver King Mill is built on a slope to facilitate the use of gravity in moving and processing ore. The building extends nearly 300 feet up the hillside with a series of concrete foundations poured on terraces cut into the slope, with each terrace supporting a stage of ore treatment. The slope and terraced floors are the principal feature of the Silver King Mill.

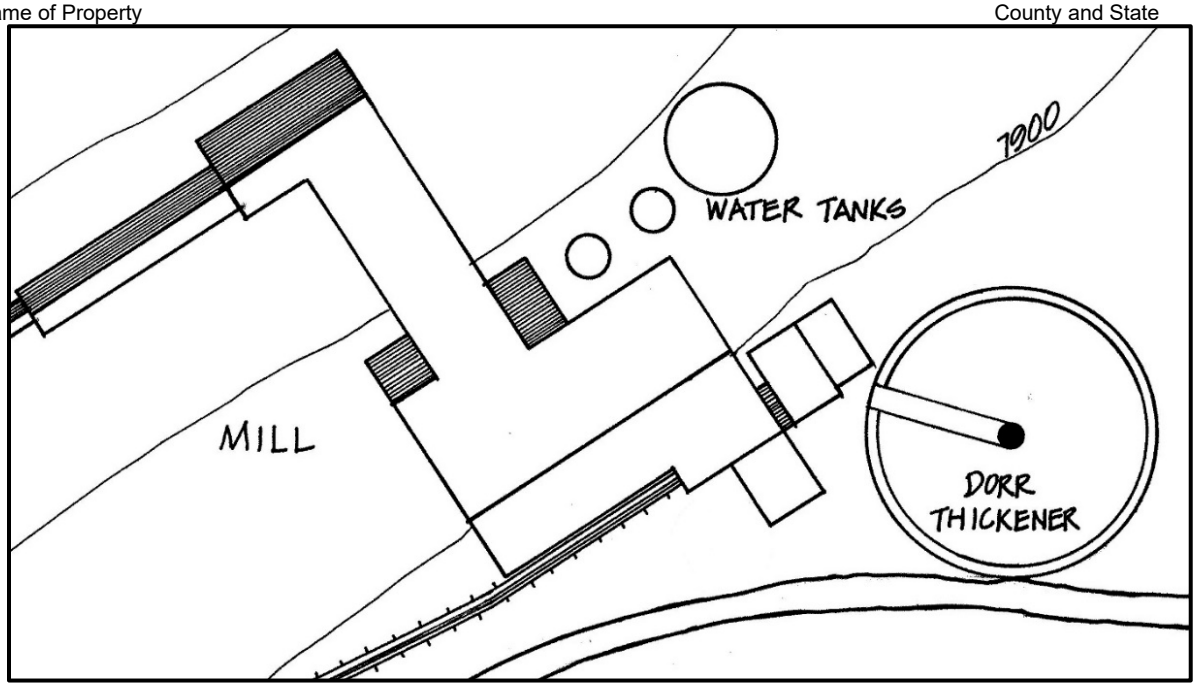

Figure 10. Silver King Coalition Mill building, detail redrawn from HAER UT-22, 1972.

Constructed in 1921, it replaced the original 1898 wood frame mill that was destroyed by fire.[21] Since the concrete foundation from the 1898 mill survived, the new mill was designed to match the footprint of the old mill and the foundation reused as a cost saving measure. Engineered for greater capacity, greater efficiency and economical concentration, the new mill featured the latest scientific technology– selective froth flotation, a sophisticated modern ore concentration process. The massive modern machinery doubled beneficiation capacity to 1,000 tons per day. The design worked, the Silver King reduced costs and increased their profits.

Exterior

Although the structure lacks ornamentation and holds little architectural detail, the Silver King Beneficiation Mill is an excellent example of a purpose-built utilitarian building of steel frame and corrugated metal clad construction. In fact, this lack of distinctive elements is significant. As reported in a leading mining journal of the time:

> This new mill presents no striking or extremely novel features but is rather the embodiment of the best practice of the Park City district. The new plant is thoroughly modern, designed for low operating and low maintenance costs, for economical extraction of values, and for the comfort and efficiency of the mill men.[22]

The shed and gable roof forms (indicated with shading on Figure 10 above) are clad in metal roofing materials. All the exterior walls are corrugated metal panels, however, some of the interior walls along with all the interior floors are formed from reinforced concrete. Large multi-

[21] "Silver King Coalition Mill is Destroyed by Fire," *Salt Lake Mining Review,* February 15, 1921.
[22] "The New Concentrating Mill of the Silver King Coalition Mines Company," *Salt Lake Mining Review,* December 15, 1921.

lite rolled steel casement windows on the east and west facades provide abundant daylight, although most no longer retain their glazing.

The narrow upper half of the mill, about 40-feet wide, houses the crusher plant. The mill's top floor is concurrent in elevation with the Shaft House so miners could easily deliver crude ore for processing using ore cars. Three rectangular reinforced flat-bottom concrete receiving bins are located underneath the extant portion of the covered tramway. These were used to store the incoming coarse ore. Approximately 40-feet long, 20-feet wide and 20-feet deep, the combined capacity of these ore storage bins was estimated at 3,000 tons, providing a three-day supply.

The lower level of the mill is more than twice the width of the upper, at approximately 150 feet wide. The sloped shed roof is interrupted by a row of six clerestory windows that provide natural light and ventilation. This area houses the concentration plant along with boiler plant and carpenter and machine shops.

The L-shaped concrete and steel addition on the front façade has collapsed. It was constructed in 1926 to increase the capacity for the new froth flotation concentration process. A rectangular addition, to the east of the mill's lower half, houses a coal fired heating system and coal shed. A boiler remains inside the addition and a large chimney still protrudes from the gable roof.

Interior

Typical of an industrial structure, the Beneficiation Mill building is not insulated and the interior is unfinished with the steel wall and roof framing exposed and the corrugated metal cladding visible. The mill building features open floor plans, high ceilings and few to no interior walls that might block the abundant natural light or obstruct the crushing and concentrating processes. Four main levels are connected by prefabricated steel staircases and multiple mezzanine floors rest in between. Each level is stepped into the steep hillside, blocked by robust retaining walls consisting of sandstone masonry or poured concrete or both. The floors, built to support heavy equipment, consist of steel structure with steel support beams, laid with timber planks and a concrete topcoat. Incorporated into the floor are several machinery mounts, demonstrating the former location of heavy equipment, that has since been removed.

The top floor of the mill is level with the covered tramway and unloading station. Two sets of metal stairs lead down to the large open third floor where the gyrator crusher (Figure 14) and Allis-Chalmers roll crusher are located. A long hallway west of the gyratory crusher and parallel to the hillside, provides access under the concrete receiving bins. Ore gates, controlled by roll feeders, dumped ore onto a conveyor belt where the large pieces of high-grade ore or waste rock were picked off before moving the ore to the gyratory crusher. The south retaining wall in this hallway consists of irregular courses of ashlar masonry.

Figure 11: Eight-inch roll-type feeders controlled the passage of ore onto the conveyor belt (visible center). Source: Sandra Morrison 2024.

Figure 12: Even today, the conveyor belt still holds large pieces of ore. Source: Sandra Morrison 2024.

Many of the 18-inch-wide distributor conveyor belts remain throughout the building; these moved the various sized ore automatically to the next step in the crushing process.

Figure 13. A timber frame holds the rollers of this conveyor, while other conveyors remaining in the mill feature a steel frame. Source: Sandra Morrison, 2023.

The third floor is 40-feet wide and 80-feet deep and approximately two-stories tall. In the middle of the room a wood feeder hovers over a large concrete foundation (Figure 15), probably the support for the Symons cone crusher. Three ball mills were also located in the building but only the Allis-Chalmers roll crusher (Figure 14) remains, the ball mills were probably removed for reuse elsewhere or sold.

Prefabricated metal stairs lead down to the second level and the much larger 150-foot-wide and 45-foot-deep room in the lower, wider half of the mill building. The row of six clerestory windows floods the three-story-tall room with natural light while providing ventilation. Multi-lite rolled steel windows were commonly used in the 1920s for industrial buildings. Two windows to the east consists of three 5 over 4 lites with pivoting middle sash, flanked two fixed 3 × 4 lite windows. Four windows to the west each consist of three sets of fixed 5 over 4 lite windows. All windows retain the original metal sashes including mullions and muntins. Most of the clear glazing has been broken or is now missing. Interior steel columns and beams hold up the ceiling

and the mezzanine floor that contains the reagent tank (Figure 18). A metal gantry is located close to the ceiling, installed on two large parallel metal beams. The concrete floor features openings, apparently for piping the slurry to the flotation tanks below. Little equipment remains on this level, although the words SILVER KING COALITION MINES CO are stamped into the poured concrete retaining wall on the north end of the room.

Stairs lead down from either side of this room to the lower level. Here the Oliver filter is located (Figure 20). Between level one and two, the flotation tanks are located on a mezzanine floor, which measures 18-feet wide and 90-feet long.

EQUIPMENT

After the ore was unloaded into the large-capacity concrete receiving bins (underneath the covered tramway) at the top floor, it was sorted and fed down through the mill for processing or "ore dressing." The Silver King Mill used the new, modern selective froth flotation process that had been developed in the early twentieth century. The process allowed the millman to selectively separate and concentrate multiple different metals (silver, lead and zinc) from Park City's low-grade ore. This new industrial technique could profitably process low-grade ore once considered waste. Production at the Silver King shifted from extracting just high-grade ore to processing all ore, including complex and low-grade ore, thereby capturing profits from various metal concentrates. In fact, production of metals could now be achieved at a lower price than otherwise thought possible.

The process of selective-flotation involves: 1) the reduction (crushing and grinding) of the ore a very find powder to free the minerals; 2) the addition of water, chemical reagents and frothers, which encourages the selected mineral to adhere to air bubbles; 3) the formation of a mineral-laden froth on the water surface; 5) skimming or floating off the mineral-laden froth; and 6) the collection and drying (or de-watering) the resulting concentrate for shipment to the smelter. Much of the equipment used in this process remains inside the Silver King Mill today.

- **Gyratory Crusher and Grizzly**
  Installation date: c.1928
  Contributing Resource

On the third level of the mill sits the huge No. 6-KD Allis-Chalmers gyratory crusher, the first stage of physical reduction. The gyratory motion provided continuous crushing to handle a huge capacity of ore. The process consisted of the ore being fed from the incoming ore bins by the feeder belt and passed over the grizzly. As the primary crusher, the gyratory crusher reduced the ore into two-inch or smaller gravel. This resultant material traveled via a conveyor belt for secondary crushing in the Symons cone crusher to reduce the ore to three eighth-inch pieces.

Figure 14. Allis-Chalmers gyratory crusher (full of wood and debris) and grizzly on the right. A grizzly is simply a screen with metal bars placed so smaller ore pieces could fall through and bypass the crusher.
Source: Sandra Morrison, 2024.

- **Symons Cone Crusher**
  Installation date: c.1928
  Contributing Resource

With the remodel of the grinding process in 1928, a four-foot Symons cone crusher was installed.[23] Introduced by the Symons brothers in the 1920s, this equipment is still preferred by mining operations throughout the world, offering many advantages over other crushers, such as low energy consumption and reliable and efficient operation. The crusher is gone from inside the mill, presumably sold given that these machines are still in use today. The two-story-tall wood feeder remains hovering over the concrete foundation. The Symons brothers' invention depended upon the ore falling vertically into the crushing chamber. Prefabricated metal stairs and mezzanine floor provide access to the mouth of the feeder.

Figure 15. Cone Crusher feeder and foundation. Source: Sandra Morrison, 2024.

[23] H.C. Keiser, "Economies and Increased Production Achieved: Results of Remodeling a Flotation Mill" *Engineering and Mining Journal*, Vol. 126, No. 19 (November 10, 1928), 748-750.

- **Allis-Chalmers Belt-Driven Roll Crusher**
  Installation date: c.1921
  Contributing Resource

A roller crusher reduces ore by compressing it between two turning cylinders called rolls (Figure 17). Each roll is independently driven by the flywheel-type pulley on each side, with the shaft of the fixed or stationary roll attached to the large pulley and the moveable roll shaft to the small pulley. The crusher was powered using wide flat belts that transmit power across large distances with approximately 99% efficiency, although today these belts are missing. The moveable roll can be adjusted to change the distance between the rollers to accommodate the size of the incoming ore and control the output size. The speed can also be regulated according to the size of the incoming ore. Each roll is encased in a dust-tight steel housing, The movable roll is spring-loaded to provide safety relief of any excessive pressure.[24] Given all these adjustments, crushing rolls require a certain amount of skill and experience from the millman for best performance.

The 1921 concentration mill flow sheet indicates a 43" x 16" "A.C. [Allis-Chalmers] Roll installed after the gyratory crusher in the crushing plant. The 1928 flow sheet indicates this equipment was replaced by a Symons cone crusher. The Allis-Chalmers roll crusher (adjacent to the cone crusher) was possibly kept after the 1928 remodel to provide a back-up crushing method that could keep the mill operating if the Symons Cone crusher needed repair or maintenance.

Figure 16. Allis-Chalmers roll crusher. Source: Sandra Morrison, 2023.

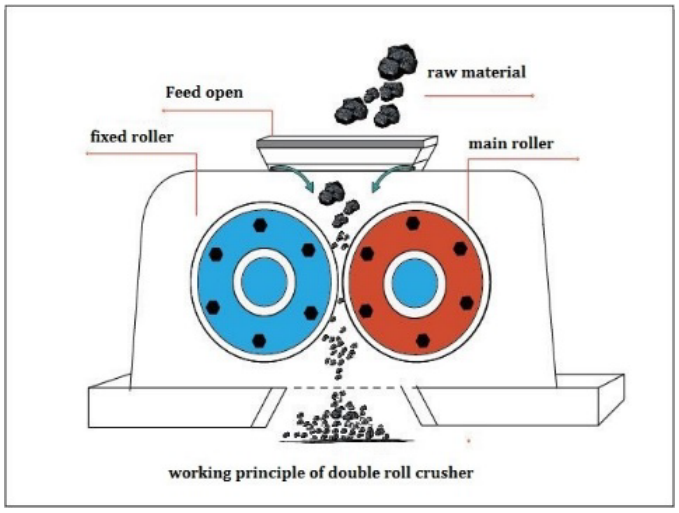

Figure 17. Mounted horizontally, the moveable or main roller rests on strong springs while the other is fixed. Source: https://www.911metallurgist.com/equipment/roll-crushers/. Accessed 6/10/2024

[24] Allis-Chalmers Company. *Mining Machinery Catalogue No. 9 Concentrating Machinery*. Fraser & Chalmers Works, Chicago Il. 1901.

- **Reagent Mixing Tank**
  Installation date: c.1928
  Contributing Resource

Flotation extracts valuable metals from finely ground ores using a water "bath," made up of water, chemically altered with additives (called reagents) and detergents (or frothers) to encourage the separation. Oils and various chemicals added to the slurry separate the minerals from each other while encouraging a mineral-laden froth of bubbles thereby improving recovery rates.

One reagent mixing tank remains on the mezzanine above the second floor. Water was introduced to the reduced ore during the secondary crushing (in the ball mills) to create a slurry. Reagents, including soda ash, zinc sulphate and Aerofloat were also added, making the slurry ready for flotation. Specific reagents were added by the Silver King millmen depending upon which concentrate they wanted to produce, such as pine oil for lead flotation or copper sulphate for zinc flotation.

Figure 18: Reagent mixing tank inside the Silver King Mill.
Source: Sandra Morrison, 2024.

- **Flotation Tanks**
  Installation date: c.1921
  Contributing Resource

Thirteen of the original twenty-eight froth flotation cells or tanks survive inside the Silver King mill (Figure 19). These well-preserved tanks are aligned in two rows on the mezzanine above the first floor of the mill (the first floor housed the carpentry and machine shops).

Compressed air and agitators worked the slurry into a froth inside the flotation tank. The valuable minerals (silver, zinc or lead) would "float" to the surface and attach to the bubbles allowing mineral-heavy froth to be skimmed off the top. Waste rock particles settled to the

bottom and collected as mill tailings. With minor adjustments in the reagents, the process can be repeated as often as necessary to recover as many different types of metals or minerals as possible from the slurry.

Figure 19. Four of the flotation tanks. 2023. Source: Sandra Morrison, 2023.

- **Oliver Filter**
  Installation date: 1928
  Contributing Resource

A large 8-feet in diameter and 8-feet-long rotary vacuum filter drum, made by the Oliver Company, remains on the first floor of the mill, one of two originally used as the last step in the concentration process. The mineral-heavy froth from the flotation process is pumped into a trough below the large circular drum filter. As the drum rotates, it is partially submerged in the froth-slurry. A vacuum draws liquid and air through the filter media and out the shaft hence forming a layer of cake on the filter's surface. Trapped on the surface, the cake dries during a 2/3 of revolution, removing most of the moisture (Figure 21).

Varying the drum rotation speed controlled the thickness of the cake. Since the operation was continuous and automatic, the operating cost was low. The discharged cake contained residual moisture, with lead averaging 10% moisture content and zinc only 8%. The cake concentrate was shipped damp since if it was too dry, it would blow away out of the aerial tramway buckets or railroad cars.

Figure 20. Oliver Filter
Source: Sandra Morrison, 2023.

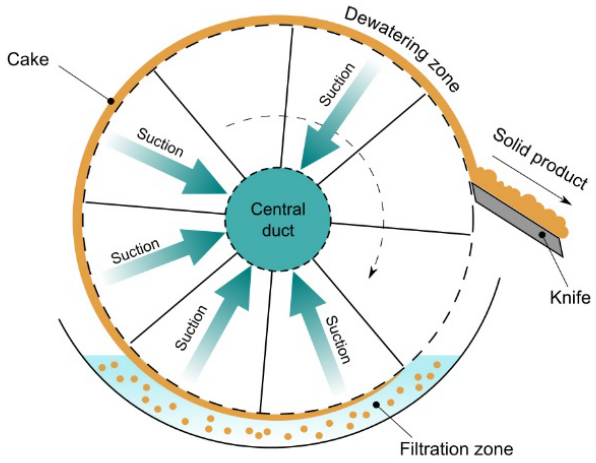

Figure 21. Diagram of Oliver Filter
Source: https://en.wikipedia.org/wiki/Rotary_vacuum drum_filter. Accessed 6/20/2024

- **Overhead driveshafts, belts and pulleys**
  Installation date: c.1921
  Contributing Resource

Many of the overhead driveshafts, also known as line shafts, along with the pulleys, remain inside the mill and can be seen in the ceiling of each floor. The horizontal metal rods rotated in bearings bolted to the mill building's frame, powered by the steam engine or, later, large electric motors. On the first floor, pulleys remain on the driveshaft with the canvas belts still hanging down. These powered the carpenter and machine shop equipment.

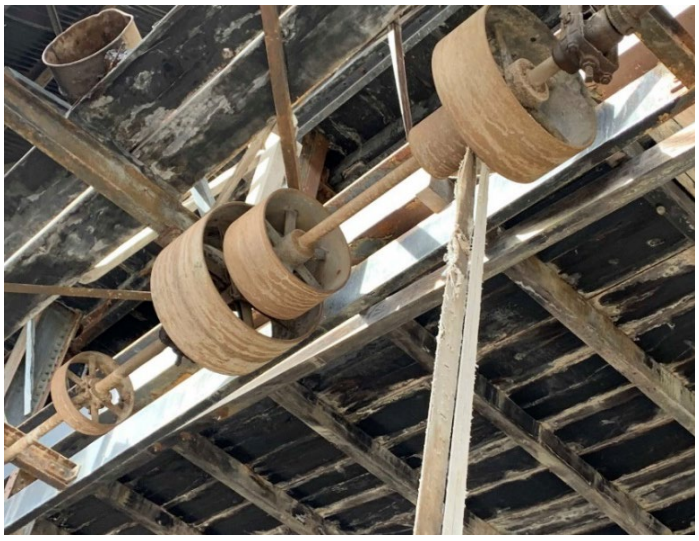

Figure 22. A few of the overhead driveshaft, pulleys and belts inside the mill.
Source: Sandra Morrison, 2023.

Historic Integrity

Although a very significant component of America's mining industry, historic flotation mills are rare across the United States, with few possessing an intact building, machinery or associated structures The Silver King Mill is in excellent structural condition and though the exterior has seen some deterioration, it retains integrity of design, materials and workmanship. After the mill closed, some of the equipment was salvaged and natural elements adversely affected the abandoned site. The neglected mill has also been a prime target for vandalism. Yet, the building stands today with the machinery and equipment still in their place of use so it retains remarkably high degree integrity of feeling and association. With little change to the site, the mill retains integrity of location and setting with the site providing the physical context of an historic concentrating mill.

2. Dorr Thickener Tank

Structure (S11) Photos No. 38 and 39
Construction date: 1930 Contributing Resource

Just southwest of the mill lies the huge circular Dorr Thickener Tank, approximately 120 feet diameter and 12 feet high. Erected in 1930[25], the new tank was used to recover thousands of gallons of water for reuse, by thickening and dewatering the mill tailings (Figure 23). A rake rotated slowly over the bottom of the tank, which sloped gently toward the center. The rake moved the waste-rock that settled into a thickened suspension on the bottom to a central discharge pipe. The rake revolved at a speed sufficient to move the waste-rock as fast as it settled. The clarified water overflowed and then pumped back uphill to the Mill Water Tank.

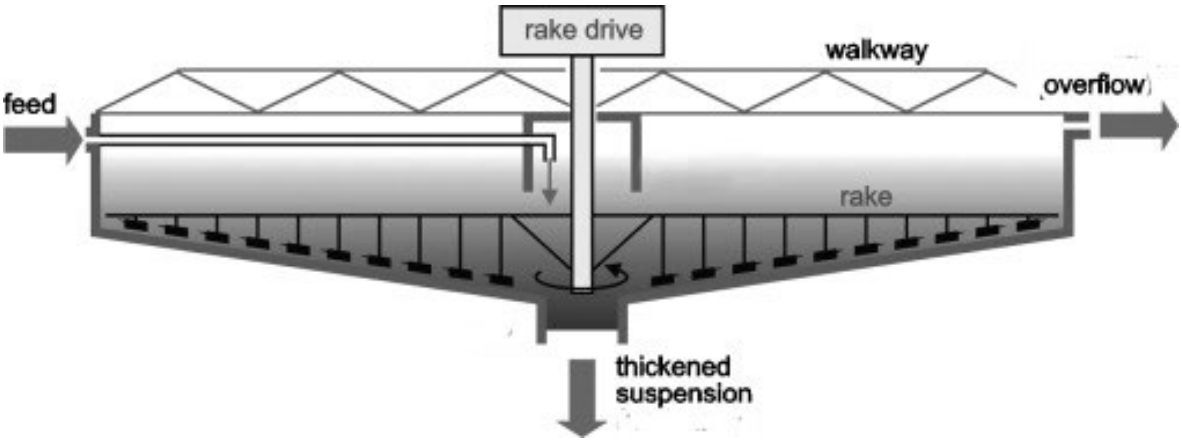

Figure 23. Diagram of Thickener Tank showing water recovery through dewatering. Source: https://www.sciencedirect.com/topics/engineering/thickener. Accessed 6/20/2024.

[25] "Mining Matters" *Park Record* , February 21, 1930

Historic Integrity
The tank was buried in the early 2000s under an agreement with the EPA but the entrance is still visible verifying the structure's location. At many other mines across the country, environmental concerns have resulted in wholesale removal of mills, equipment, even the ground they sat on, whether or not they were hazardous sites. The impact of burying the structure does not affect the integrity of location and association as the huge mound of dirt and entrance are still visible confirming the site adjacent to the Silver King mill. However, aspects of design, materials and workmanship have been greatly impacted. As an archeologic resource, the structure still may retain some integrity of design since it could be excavated to provide a valuable glimpse into the Silver King's ore processing efforts. The integrity of feeling and setting are mostly lost since the buried tank cannot easily evoke any sense of the mining refinement process that occurred here.

3. Mill Water Tank

Structure (S12) Photo No. 40
Construction date: 1921 Contributing Resource

Since water was the key liquid to carry the crushed ore to each of the next stages of the concentration process, extreme tremendous effort was made to recover as much as possible. After filtering the concentrate and thickening the waste rock, the clarified water was returned to three water tanks located about 100 feet above the base of the mill. The Silver King relied upon gravity to pressurize the plumbing, so these tanks were located upslope from the mill.

One large 40-foot-diameter, 15-foot-deep wood water tank remains, that supplied the vast amount of water required for the ore processing. Concrete piers of varying heights support and level the structure on the steep hillside. The construction method is similar to the other water tanks located at the Silver King mine site, consisting of vertical redwood planks secured by multiple iron straps.

Historic Integrity:
The water tank suffers from severe deterioration. Many of the iron straps have failed and the some of the vertical wood planks have collapsed inward. The roof is missing entirely. Because the water tank is failing, the design and workmanship have been greatly impacted. But as a ruin, the large water tank still retains historic integrity in the other areas. The structure still conveys its function of water storage and retains integrity of location, feeling, setting and, due to its relationship and correlation with the Silver King mill, integrity of association.

4. Mill Fire Hose Shacks 1 & 2

Structures (S13 & S14) Photos No. 41 and 42
Construction date: 1900s Contributing Resource

Two very small red structures are located west of the mill, one above and one below the covered tramway grade. [26] Like the fire hose shacks located south of the Shaft House, these wood frame structures are both approximately five feet wide by four feet deep, clad with board-and-batten siding with a gable roof clad with wood shingles. Both, at one time, were painted red. Both also have a single door opening but probably never featured a door. Neither structure is insulated so the framing, rafters, wall and roof sheathing are exposed on the inside. No equipment remains inside either shack. Neither structure has a foundation, only wood sill plates, with the downhill shack sitting directly on grade. The uphill shack sits on a rock wall consisting of irregular courses of ashlar sandstone masonry.

Historic Integrity

The design of these small shacks reflects the historic technology for fire suppression at an industrial site in the early 20th century. The design, materials and workmanship are expressed in the vernacular method of construction and the plain finishes. Both were probably designed and constructed by the carpenters and miners who worked at the Silver King at that time. The uphill shack retains its association and relationship to the beneficiation mill. However, the downhill shack may have slid a few yards from its original site, given its precarious location on the hillside, held in place by the new aspen growth. This movement and the aspen trees growing around it impact but do not substantially detract from the aspects of setting or feeling and both fire hose shacks are contributing elements in the historic district.

MINE TRANSPORTATION RESOURCE

1. Aerial Tramway Towers 38 & 39

Structure (S16 & S17) Photo No. 44
Construction date: 1901 Contributing Resource

This linear feature comprises 39 steel towers, ranging in height from 16-feet to 65-feet high, stand along the route of the 7,300-foot-long Bleichert-type double-rope aerial tramway that passes through the district. However, because of the extent of this linear feature, only two of the steel towers are located within the Silver King Coalition Mine Historic District boundary. The remaining 37 towers located contiguous to but outside the boundary.

Built in 1901, the aerial tramway transported the Silver King ore to the railroad yards in Park City year-round, in spite of the winter weather, accumulating snow, and difficult mountainous terrain. The Bleichert system used two sets of steel ropes. A larger stationary carrying rope linked the upper and lower terminals. The buckets were suspended from this cable by wheels. A second, smaller and lighter rope, the traction rope, provided a continuous loop that pulled the

[26] The local newspaper noted that "Three new fire stations have been erected outside [the mill]." "Silver King Mill," *Park Record,* December 12, 1899.

buckets along the carrying rope. Although the original 80 buckets are gone, much of the wire rope survives on the ground.[27]

The A. Leschen and Sons Rope Company of St. Louis supplied their patented automatic double-rope tramway system. Although normally installed on wood towers, the Silver King needed towers that would survive the harsh mountain conditions so instead sections of 4x4 inch angle iron produced by the Gillette-Herzog Company of Minneapolis, MN were used to fabricate the towers. The distance between towers varies from 200 to 300 feet, closer together on steeper terrain. The tensioner station that provided additional support and stability, as the tramway passed over the crest of the ridge, still stands today.

Although rusted, the towers remain in stable condition and shrubs and bushes are removed from the foundations annually. The ladders, two steel crossarms and pulleys remain on each of the towers. One steel crossarms is located at the top of the tower, to support the stationary track cable, and the second, about three-feet below, accommodates the moving traction rope. Each is wide enough to permit the buckets to swing in the wind and not strike the towers. Most of the towers sit on a sandstone masonry foundation but a few are anchored onto poured concrete, probably replaced when the masonry deteriorated. The tramway ceased operating in 1953, when the Silver King plant shut down.

Historic Integrity

Since the ski resort opened in 1963, two towers located on the ski runs, have been moved and now lie in the woods at the side of the Payday and Widowmaker ski runs. The remaining thirty-seven towers maintain their original alignment thus the linear feature retains integrity of location, design, workmanship and materials. Some forest re-growth of aspen and pine trees has occurred along the mountainous route however this does not detract from the integrity of feeling or setting. The loss of the wire ropes and buckets and more especially the upper stories of the Sampler Building which served as the unloading station does diminish the sense of connectedness and integrity of association of the aerial tramway with the industrial mining operations at the Silver King.

2. Sampler Building Foundation Walls

Structure (S15) Photo No. 43
Construction date: 1901 Contributing Resource

The Sampler Building Foundation Walls, consists of three sandstone walls (Figure 24).

Wall 1 - a small low retaining wall on the slope
Wall 2 - a large free-standing wall and
Wall 3 - a third large retaining wall.

[27] The buckets moved by gravity to the lower loading station, on Park Avenue in Park City, at the fourth-floor level, 85 feet above ground. Known locally as the Coalition Building, the structure was listed on the National Register of Historic Places but burned in 1981.

All are located between the mill and Shaft House. Built of irregular courses of ashlar masonry, the foundation supported the five-story Sampler Building (Figure 25), was constructed in 1901.

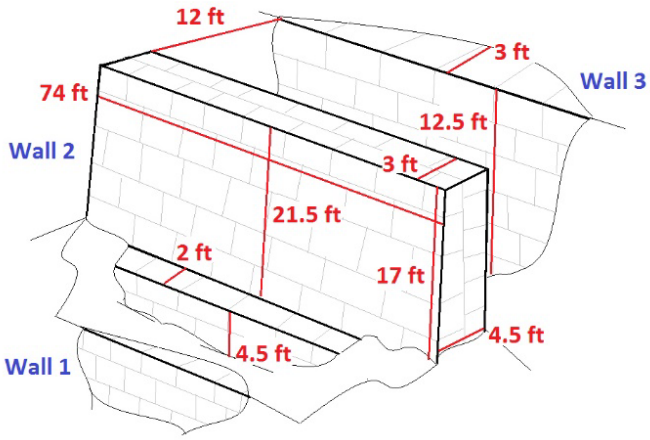

Figure 24. Dimensions and arrangement of the remaining foundation walls.
Source: SWCA, *Preservation Plan for Historic Mining Resources.* 2015. Page 110.

Figure: 25. Silver King Sampler Building
Source: Pop Jenks Collection,
Park City Museum.

Inside the sampler, high-grade ore from the mine was crushed and sampled before being loaded directly into the buckets of the aerial tramway. An incline conveyor hauled ore concentrates from the mill up to the third floor of the Sampler Building (Figure 25). Before being transported on the aerial tramway, all material was sampled by two men, one representing the buyer and one representing the Silver King. Tramway buckets of ore left from the top floor, where four receiving bins automatically unloaded incoming coal or any other supplies. The incline conveyor sent the coal back down to the mill. The automatic equipment meant the Sampler could be run with as few as just one man.

Historic Integrity

The most significant change to this resource is the loss of the wood Sampler Building, which was torn down by the mine company around 1965. The remaining foundation walls of the Sampler are in fair overall condition. The slope was regraded during the environmental remediation work in the early 2000s and the Sampler ruins, particularly Wall 1 and Wall 3, are now somewhat buried in the moved fill. This regrading appears to have pushed Wall 3 outward slightly at the top. However, the twenty-one-foot-high foundation Wall 2 is a monumental, highly visible element of the complex, standing dramatically between the Shaft House and Mill.

The Sampler Building Foundation Walls remain in their original location. Due to their visibility directly between the Shaft House and Mill, the walls indicate the building's strategic importance for the flow of ore at the Silver King and association to all the surface structures operations. However, key aspects of how the Sampler operated and fundamental components are lost so the

design, feeling and setting are compromised in that regard. The diminished historic integrity of this structure does not substantially impact the historic integrity of the Silver King surface plant and site.

3. Covered Tramway Grade

Structure (S19) Photo Nos. 22
Construction date: 1898 Contributing Resource

Low-grade or milling ore was delivered up to the shaft collar in 16-cubic-foot steel ore cars. The cars were then gathered into a train and trammed along the covered tramway by an electric locomotive to the mill's upper loading station. The Silver King expected to operate year-round so covered the grade to combat the high mountain climate. Today, the tramway grade is still highly visible with some of the narrow-gauge iron rail extant.

Historic Integrity

Due to harsh environment, long-term abandonment and neglect, most of the wood cover structure is gone from the tramway grade, except for the 100-foot-long portion closest to the mill. However, the grade retains its integrity of location with the alignment and imprint on the landscape easily recognizable as a surface tramway route. This transportation feature conveys the sense of connectedness from the Shaft House to the Beneficiation Mill, demonstrating integrity of association. The dilapidated tramway cover by the mill contributes to the aspect of setting, retaining original design, materials and workmanship. The linear feature contributes to the historic qualities of the Silver King Coalition Mine Historic District.

4. Haul Road

Structure(S20) Photo No. 49
Construction date: 1891 Contributing Resource

The haul road was the principal artery that allowed ore cars on narrow-gauge rails and later dump trucks to deliver waste rock to the Silver King waste rock dump. Miners underground drilled and blasted then shoveled the resultant waste rock into an ore car which was loaded onto the cage and hoisted above ground. The Silver King generated enough rock and ore car traffic underground to warrant hiring mine laborers known as "muckers" who specifically loaded empty ore cars with rock.

By 1913, the haul road had expanded to three tracks wide, providing approach of the waste dump from one direction and ability leave in the other and room for storage of empty ore cars.[28] Miners could "hand-tram" a single ore car or trains of ore cars were pulled by draft animals and later small electric battery-powered locomotives.

[28] Howard, L.O., "The Silver King Coalition Mines," *Salt Lake Mining Review*, November 30, 1913.

Historic Integrity

This lineal feature is so obviously a road that it now serves as a popular mountain bike trail. This current use does not negatively impact the resources integrity of location, setting, feeling and location.

Noncontributing Features

1. **Bonanza Chair lower loading station**
   Construction date: 1997 Photo No. 47
   Noncontributing Structure (S21)

In 1997, the Park City Mountain Resort removed the thirty-four-year-old gondola, replacing it with two new six-person high-speed chair lifts. The base of the new Bonanza lift is sited 110 feet from the Silver King Shaft House. A ski run was graded at the same time to allow skier access to the chairlift. Since the Bonanza chair lift was not present during the period of significance and does not relate to the documented historic significance of the historic district, it is classified as a noncontributing structure. The chairlift does not substantially detract from the integrity of the Silver King Coalition Mines Historic District.

Historical Integrity of Historic District

Location and Setting

The Silver King Coalition Mine Historic District retains integrity of setting and location. The setting is generally remote, located three miles from the town of Park City, in the narrow gully called Woodside Gulch. Except for 75 years of deterioration, much of the site has remained unaltered ever since surface operations stopped in the 1950s. The disturbances and impact of the mining operations on the mountain terrain are still very evident. The waste rock is a bold and distinctive element of the mine's historic landscape with a considerable amount of the bare material still exposed. The huge size correlates to the Silver King's extensive underground workings. The setting and feeling convey the remote nature of mining in the Park City Mining District's rugged landscape from the early 1890s through the 1950s.

The site is intruded upon by recent skiing industry infrastructure. The base of the modern high-speed Bonanza chair lift sits north of the Shaft House building. A modern ski run, accessing this chairlift, lies on the waste dump, overlapping the tramway grade used to ship ore between the shaft and mill. The registration requirements of the *Historic Mining Resources of Park City* MPDF state "Maintaining the overall form and massing of the historic resource is the most important factor when evaluating the impact of non-historic intrusions which are acceptable if

they do not overwhelm the original resource."[29] The chair lift loading station and ski run do not overly compromise the setting and only have a minor negative impact on the overall historic integrity of the district. This industrial mine surface plant, though somewhat unsightly in the mountain setting and appearing dilapidated, still holds all the vestiges of historic mining activity.

Feeling, Association and Design

The historic district invokes a strong sense of feeling, especially since the abandoned nature of the site reflects the boom-and-bust cycles of Park City's historic mining industry. The key mining components remain visible and convey a strong sense of connectedness to the Silver King's mining operation. The site retains many related mine structures, from extraction (shaft, headframe and Shaft House) to refinement (mill building) and transportation off the mountain (aerial tramway towers). The registration requirements of the *Historic Mining Resources of Park City* MPDF state:

> Integrity of design, feeling and association is particularly crucial to the eligibility as a Mine Historic District. Sites should contain a set of mining related buildings, structures, machinery and other features that convey a strong sense of connectedness and ability to discern the historic mining operation. Sites are still acceptable with missing buildings and structures if there are enough extant buildings, structures, ruins or remnants to provide an understanding of the site's use.[30]

Although some components of the surface mining operation at the Silver King are missing, such as the Sampler building and covered tramway, the extant buildings along with foundations, grades, and other deteriorated remains retain good historic integrity and reveal the complete mining system at the Silver King.

Materials, workmanship

Despite abandonment of the mining operations decades ago, the extant buildings and other resources in the historic district retain good historical integrity of the original workmanship. The Historic Mining Resources of Park City, Utah MPDF states, "Intact buildings, engineered structures and machinery are rare and important examples of Park City's extensive mining industry. These resources reveal how miners adapted conventional mining architecture or engineering to local conditions and provide integrity of workmanship."[31] All the extant buildings and structures demonstrate this adaptive design, with modifications necessary to fit the surface plant at the head of a narrow mountain canyon. Again, although now unused and deteriorated, the various features still retain enough historic integrity to convey their original construction and use.

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[29] Morrison Sandra, *Historic Mining Resources of Park City, Utah Multiple Property Documentation Form*, National Register of Historic Places. 2023.

[30] Morrison, *Historic Mining Resources of Park City, Utah MPF*.

[31] Morrison, *Historic Mining Resources of Park City, Utah MPF*.

Following the surface plant's closing in the 1950s, little repair or restoration work has occurred. The registration requirements of the MPDF also state, "It is understood that because of long-term abandonment these resources will lack some aspects of integrity in design, materials and workmanship and will need to be evaluated on a case-by-case basis." [32] Minimal remodel work occurred in the 1970s on the exterior of the Change House and Warehouse with the installation of one garage door on each building. Overall, however, the historic materials and workmanship of these two buildings were retained. In the ensuing 50-plus years, the garage metal doors have rusted and deteriorated so do not detract from the historic workmanship and materials.

Most recently the shaft was closed for safety reasons, under the direction of the Utah Division of Oil, Gas & Mining and utilizing federal funds from the Abandoned Mine Reclamation Program. The mining contractor reports:

> We filled the top of the shaft with [Polyurethane Foam] PUF and then put a concrete cap over the PUF and encased the foundations for the legs on the headframe in concrete to stabilize the headframe. It is now guaranteed to never fall over.[33] (See Figure 26).

The National Park Service has tested several different applications of PUF to close abandoned mine openings and found that, "PUF has proven to be a useful material for mine closures, especially in remote areas, sites with access and disturbance restrictions."[34]

Figure 26. Capping of the Silver King 3-compartment shaft in the summer of 2023. Source: Brian Buck, Friends of Ski Mining Mountain History. 2023

[32] Morrison, *Historic Mining Resources of Park City, Utah MPF*.
[33] Clark Martinez, Email message to author, January 16, 2024
[34] John E. Burghardt, Geologist, *Polyurethane Foam Applications in the Closure of Abandoned Mine Openings.* National Park Service Geologic Resources Division. August 1994. http://npshistory.com/publications/mines/puf-1994.pdf.

Summary

The individual features of the Silver King Coalition Mine Historic District – shaft, shaft house, warehouse, change house, transformer building, mill, aerial tramway, water tanks, fire hose shacks, along with the huge waste rock dump – are little altered, other than deterioration, from their original appearance and possess high degrees of historic integrity of location, design, setting, materials, workmanship, feeling, and association. The historic district still conveys the operation of a large-scale "Bonanza" mine and mining surface plant; a snapshot of the flow of ore and waste rock during the mine's era of sustained production of ore, 1891 to 1953. The general form and lack of ornamentation of these vernacular industrial buildings and structures gives them significance as a utilitarian large-scale industrial mining complex. The Silver King Coalition Mine Historic District retains its historic integrity and its multitude of contributing components combine to convey the image of Park City's most historically significant mining operation.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [X] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [X] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark “x” in all the boxes that apply.)

- [ ] A. Owned by a religious institution or used for religious purposes
- [ ] B. Removed from its original location
- [ ] C. A birthplace or grave
- [ ] D. A cemetery
- [ ] E. A reconstructed building, object, or structure
- [ ] F. A commemorative property
- [ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
INDUSTRY
ENGINEERING
ARCHEOLOGY-Historic/Non-aboriginal

Period of Significance
1891 to 1953

Significant Dates
1891: Silver King 750-foot-deep shaft sunk
1892: Silver King claims purchased for $65,000
1902: Installation of new hoisting works & aerial tramway
1907: Silver King merged with scores of nearby mining groups and companies
1921-1928: New concentration mill & surface plant upgrades
1937: Replacement of steam power with electric motor & Norberg electric hoisting works

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
Undefined

Architect/Builder
N/A

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Silver King Coalition Mine Historic District, Park City, Summit County, Utah is a representative large-scale industrial mining complex significant under Criteria A, C and D. Under Criterion A**,** the district is significant in the area of Industry representing a large-scale silver and lead mining and milling complex, historically one of the most productive in Park City and in Utah in general. The company's cost-effective operations resulted in phenomenal profits which allowed ambitious acquisition of adjacent mining operations. Reinvestment in state-of-the-art equipment expanded production and created a massive industrial complex that is still mostly intact, though abandoned decades ago. The historic district is further significant under Criterion C in the area of Engineering as an excellent representative example of large-scale silver mine engineering, technology and surface plant construction. The historic district possesses a collection of intact buildings, structures, equipment and mining and milling features indicative of the adaptation of mining to Park City's mountains. These distinctive characteristics of a "bonanza" mine and mill operation are little altered and the processing pattern of ore production is clearly evident. The mining and milling technology and engineering installed at the complex from the 1920s through the 1930s, much still extant, were state-of-the-art for the time. Finally, the district is also significant under Criterion D in the area of Archeology for its historic archaeological deposits that have the potential to yield important information. In the area of Industry, deposits could clarify the relationship between the mining and milling processes and, in the area of Social History, inform on the economic status, health, and even dietary preferences of workers at the Silver King. The Period of Significance includes all the years the surface plant operated from the sinking of the Silver King shaft in 1891 to 1953, when Park City's mining companies merged and the Silver King ceased surface operations. The Silver King Coalition Mine Historic District is nominated under the "Discovery & Mining Boom Era 1868-1893," "Mature Mining Era 1894-1930" and "Mining Decline 1931-1982" contexts as described in the *Historic Mining Resources of Park City, Utah* Multiple Property Submission. It meets the registration requirements for the "Mine Historic District" property type. Although impacted by neglect and long-term abandonment, the Silver King is evocative of the highly successful "bonanza" mine of Park City and retains its integrity of location, design, materials, workmanship, and association to its period of significance 1891-1953.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Criterion A Significance

Industry

The Silver King Coalition Mine Historic District is significant under **Criterion A** in the area of Industry because it represents the immensely profitable potential of the silver mining industry in

Park City and Utah. From 1875 until 1983, the various mines of Park City produced almost 16 million tons of ore, making it the third largest producer of non-ferrous metallic minerals in Utah and the largest source of silver in the United States for several years in the late 19th century. Of this enormous amount, about one-third was extracted from the Silver King mine.[35]

> *Silver-lead mining in the neighborhood of Park City has made this county long famous as one of the most important mining centers in the United States…Among the magnificent properties in the Park City district the Silver King still holds undisputed sway as leader.* [36]
>
> -Director of the U.S. Mint, 1903.

Many of Park City's mines were short lived due to lack of adequate working capital or from quickly exhausting their high-grade ore bodies. Instead, the Silver King prospered and burgeoned for 60 years. Many of Park City and Utah's large mining operations were the focus of rampant speculation and heavy outside investment by capitalists looking for high returns. Instead, the Silver King owners were a small group of local investors well aware of local trends and the national boom-and-bust cycles typical of the mining industry. These men rocketed the mine to an industrial scale. They guarantee long-term success by seizing expansion opportunities through mergers and acquisitions, relying upon their own mining expertise and keeping financial control.

Mergers are a constant theme in Park City's mining history and the most vivid example is the Silver King. Five local men strategically and rapidly formed the giant Silver King Coalition Mines company in less than two decades. In 1891, at the Silver King claims nos. 1, 2, 3 & 4 in Woodside Gulch west of Park City, a 750-foot-deep shaft was sunk. The "gritty mining men" had invested in a "blind hole" as the Salt Lake Herald newspaper called the prospect.[37]

The Silver King was the brainchild of the young miner Thomas Kearns and his mentor David Keith, Superintendent of the Anchor Mine. Pursuing their ambition, they had previously leased the established and proven Mayflower mine for 12 months. To raise additional capital, complement their business expertise, spread the risk and, presumably, keep operating costs low, they persuaded successful local miner John Judge and respected local accountant Albion Emery along with Windsor Rice, manager of various other local mining enterprises, to join their venture. Soon the Mayflower was shipping 50 tons of high-grade ore daily valued at $2,500[38],

[35] David A John, *Geology and Mining History of the Park City Mining District, Mining Districts of Utah*. (Utah Geological Association Publication 32, 2006), 67.
[36] Director of the Mint, *Production of Precious Metals in the United States during the Calendar Year 1902*. (Washington: Government Printing Office 1903), 204.
[37] "Caught in the Daily Roundup," *Salt Lake Herald-Republican,* September 29. 1892.
[38] Original leasers also included Willian Bennet, Con Hunt and Peter Royce. ("Another Strike," *Park Record,* April 27. 1889. "Nearing the End," *Salt Lake Herald-Republican,* April 6, 1892. "About the Mines," *Park Record,* May 5, 1889. "Mines and Mills of Utah," *Salt Lake Herald-Republican,* December 25, 1891) Apparently Judge, Emery and Rice bought out the other lease holders.

providing sufficient initial working capital to purchase the adjacent Silver King claims[39] and begin founding a mining empire.

The Silver King owners relied on their accumulated knowledge and expertise of efficient mining operations along with their combined understanding of Park City's geology. By closely holding all the shares, they avoided the machinations of outside investors. Instead of grasping the profits, the owners sank their earnings into new equipment and operational upgrades.[40] Thirty-year-old Thomas Kearns worked on site while the considerably older partners continued working their "day jobs" at other Park City mines.[41] The local newspaper declared in 1894:

> The Silver King mine is one of the most skillfully and conveniently opened mines… Not only is it a perfect mine as regards the skill and judgment used in opening it, but it is a wonder as an ore producer.[42]

As the price of silver dropped rapidly throughout 1890s, Park City's small mines struggled. The fortunate timing of this "bust" cycle, however, provided rich opportunities for the Silver King as the company snapped-up the Mayflower, Northland-Nevada, Fairview, Park City Group, Woodside, Massachusetts and Alliance.[43] Exploration began for ore bodies in the Alliance Tunnel, which had been constructed by Judge and Keith back in 1889-1890. At the annual stockholders meeting, the company reported that with these acquisitions, it now possessed the largest amount of mineral ground owned by any mine company in Utah.[44]

The Silver King poured silver, lead and zinc into the nation's Gilded Era industrialization and turned ore into wealth. In less than 10 years, the company had paid almost $2.5 million in dividends to its small number of stockholders. So lucrative and effectively managed, all the principals had become fabulously rich "Bonanza Kings". Emery's widow Susanna, with holdings

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[39] The Silver King ground was purchased for $65,000 in 1892. "Said to be a bargain… the purchasers will take out [that] amount of ore in very short time" *("*Sale of the Silver King," *Salt Lake Tribune,* April 24, 1892). The Silver King produced almost 3,000 tons of ore in 1892 with net value of $94,000 (Boutwell. *Geology and Ore Deposits of the Park City Districts.* page 180). The profit was immediately invested in surface plant improvements including shaft house and hoisting machinery, with an estimated value of $100,000 ("Great is Park City," *Salt Lake Herald-Republican,* December 25, 1892).

[40] The 150,000 shares were all were assigned to the principals: Kearns, Keith, Emery, and Judge each received approximately 17%, Rice (10%) while two of the original owners of the Silver King claims retained ownership W.H Dodge (13%), and David. D. Erwin (8%). No shares were made available for public purchase. ("Silver King Mining Company," *Salt Lake Times,* August 23, 1892).

[41] David Keith worked at the Ontario for eight years then as Superintendent of the Anchor Mine until he retired in 1900 ("The King Sampler," *Park Record,* June 9, 1900). Thomas Kearns worked in various Park City mines from the early 1880s. ("An Important Day," *Salt Lake Herald-Republican,* April 3, 1892). Until a few months prior to his death of miners' consumption (silicosis) in 1892, 47-year-old John Judge had managed the Daly Mine ("Death of John Judge," *Salt Lake Times,* September 15, 1892). Albion Emery served as Park City Postmaster then continued working locally as a well-respected accountant. He also represented Summit County in the Utah Territorial Legislature and died just two years after Judge in 1894. Both men left their Silver King holdings and growing fortunes to their wives.

[42] "A New Compressor," *Park Record,* November 12, 1929.

[43] Boutwell, *Geology and Ore Deposits of the Park City Districts*, 179.

[44] "Now Owns Alliance," *Salt Lake Herald-Republican,* January 16, 1900.

estimated at $2 million and monthly income of $12,000 earned the title Utah's Silver Queen. "Probably one of the wealthiest widows in the west" a Salt Lake newspaper reported.[45]

Kearns remained as Superintendent in charge of the day-to-day operations and according to one newspaper man "has displayed spending judgment and sagacity".[46] To keep production levels high, Kearns kept up to 100 miners in active exploration, locating new ore bodies. This was often more miners than the number actually extracting ore.[47] Under the headline "Park City's Stupendous Performance," the *Salt Lake Herald* newspaper wrote in 1901:

> This mine is becoming well and favorable known throughout the country as almost any in the whole Rocky Mountain region. The most of its stock is held by comparatively few shareholders and unlike most of the mining investors in the state, they are investing their profits at home.[48]

The most substantial consolidation occurred in 1907. The Silver King Mining Company merged with scores of nearby mining groups, encompassing 2,088 acres and forming the new company the Silver King Coalition Mines Company.[49] Now captains of Utah's mining industry, David Keith and Thomas Kearns retained control by holding 60% of the company between them.[50] The rest of the stock became widely available, offered locally on the Salt Lake Exchange. Kearns retained day-to-day control as General Manager, announcing "We shall get right down to business at once…The new company starts off with a good treasury."[51] All mining operations were merged, centered around the Silver King shaft and surface plant.[52] The new company now controlled an additional 1,400 acres of contiguous undeveloped ground".[53]

Metal prices plummeted again during the Great Depression taking a toll on the company's finances, but production was not completely paralyzed. By successfully diversifying, lead and zinc sales contributed about half to the company's declining income in 1934. Drastically cutting wages kept 500 Park City miners on the payroll but any profit had vanished. Due to the Silver King's industrial scale, it weathered the down-turn in the market, one of the darkest and longest economic depressions in U.S. mining industry.

The minerals industry began to pull out of its slump with the approach of World War II. Armament created a demand for base-metals, including lead and zinc, which literally took over the Silver King production and by 1947, almost three-quarters of income came from these

[45] "Mrs. Emery to Marry," *Salt Lake Herald-Republican*, October 9, 1899.
[46] "Park City, the Great Bonanza Camp," *Salt Lake Herald-Republican*, December 31, 1899.
[47] *Ibid.*
[48] "Park City's Stupendous Performance," *Salt Lake Herald-Republican*, December 29. 1901.
[49] The Kearns-Keith, Crescent, Apex, Boss, St. Louis Magnolia, Baltimore, Pinyon Ridge, Odin, Belmont and Jupiter Mining companies were all absorbed including 297 patented mining claims ("King Coalition Annual is Held," *Salt Lake Herald-Republican,* May 18, 1909.)
[50] "Silver King Coalition," *Salt Lake Herald-Republican*, June 20. 1907.
[51] "Mining Matters," *Park Record,* May 25, 1907.
[52] "Silver King Deal Closed," *Salt Lake Herald-Republican,* May 22, 1907.
[53] "Silver King Coalition Buys Silver--King Consolidated," *Park Record,* May 23, 1924.

two metals. However, after WWII, due to large stockpiles of metal across the nation, market prices crashed. Suddenly unprofitable, the great Silver King was faced with one last merger – one that included all Park City's mine companies still hanging on – into United Park City Mines Company. All operations at the Silver King surface plant terminated in 1953. The heyday of silver mining was over for Park City and Utah.

Shrewd management by a small group of five skilled and knowledgeable local miners had created a nationally recognized "bonanza mine" from an assortment of small mines and claims. Through diligence and prudent outlays, production surged and profits stockpiled. Conveniently, as the Silver King's available capital amassed in the early 1900s, the price of mining equipment and machinery dropped even while it became increasingly sophisticated and efficient. The sheer number and type of machines for sale ensured constant improvement of the mine surface plant and the technology used underground. The Silver King proved bigger was better, large-scale industrial mines could not only financially weather downturns in the silver market but successfully survive and even thrive the boom-and-bust cycles of hard-rock mining.

Criterion C Significance

Engineering

The Silver King Coalition Mine Historic District is significant under Criterion C in the Area of Engineering as it demonstrates nearly the full extent of the resources used in a moderate-size mining operation. Although time has taken its toll on the condition of the various resources in the district, and only foundations remain in some instances, the collection of buildings, structures and objects provides near complete representation of the Silver King Mine operation. The various resources also reflect the owners' investment in and installation of the most up-to-date equipment and technologies available in 1901 and in later upgrades in the1920s and 1930s. Financing the modern aerial tramway, larger hoisting works and updated beneficiation equipment, all extant today, formed a first-class mining and milling operation. The site also demonstrates the company's innovative means to adapt surface plant construction and ore production to Park City's steep, rugged mountainous terrain.

> *The policy of the management from the outset has been to have the best. This policy has been followed not only in the mechanical equipment of the mine, but also in all surface improvements, including provisions for employees.*
>
> - John Mason Boutwell, 1921[54]

With an eye firmly centered upon profitability, the Silver King consistently improved operations by upgrading the surface plant, installing modern technology to increase production and capture rates, and implementing automated processes to lower payroll costs. For example, by the late 1890s, the Silver King was extracting 3 to 4 million pounds of high-grade ore each month.[55]

[54] Boutwell, *Geology and Ore Deposits of the Park City Districts,* 180.
[55] "Another Bonanza," *Park Record,* August 12, 1899.

With the wood headframe too light to meet the hauling demand, it was replaced with steel construction 1902. Typical of production-class A-frame headframes, the Silver King headframe is sixty-two feet high, fabricated from steel and embedded into a well-built concrete foundation inside the Shaft House, all signifying significant production.

To solve their transportation problems -- down steep mountainous terrain and during winter blizzards resulting in mammoth snow accumulation -- the Silver King constructed the latest in transportation technology, a Bleichert double-rope type aerial tramway. To speed construction, the contract was awarded to a local company, the Mine and Smelter Supply Company of Salt Lake City, with completion due in just 90 days. Costs were reduced by requiring much of the work be undertaken by Silver King miners supervised by the Mill Foreman John Breckenridge Fleming. Salt Lake City engineer C.P. Brooks surveyed the route and within two months eighty men were scattered along the course excavating the tower foundations, followed closely by masonry foreman Neil Bonner and his crew. The total cost was estimated to reach $25,000. On June 6, Foreman Fleming oversaw the first loaded bucket sail effortlessly down the new transportation system, which functioned using gravity and, amazingly, required only two miners to operate. The innovative Bleichert systems offered advantages such as larger buckets that could carry more ore, upwards of 500 pounds each, and could cover greater distances. But these systems required advanced engineering and were considerably more expensive so only the large and well-capitalized companies, such as the Silver King, were able to justify the cost. Today, the 39 towers of the aerial tramway, complete with sandstone foundations, crossarms and sheeve wheels, demonstrate the land transportation systems used to connect mines with distant railroads. The individually designed towers were a mining engineering challenge. Each tower's design minimized the quantity of construction materials and matched the rugged mountain topography, while creating a structure that could withstand complex forces. These included the downward stress exerted by the weight of the cable and ore buckets, the horizontal pull on the cable created by starting and stopping the system and the sideways pressure of any wind. The towers are a rare survival dating from 1901.

Mining engineering has played an important part in the progress of technology in the concentration of ore. At the end of the nineteenth century, most silver mines had exhausted their supply of easily processed high-grade ore and looked to concentrate the abundant low-grade ore while diversifying beyond silver to separate out the valuable lead and zinc. Mining engineers developed the flotation process to solve this dilemma, a process that increased recovery of metals while reducing cost.[56] The construction of the flotation mill at the Silver King in 1921 followed by a technological upgrade of equipment in 1928 served to overcome the Silver King's separation problem. The previous long-term stockpiling of silver-lead-zinc-bearing low-grade ore was resolved.

When the twenty-year-old concentration mill burned down in 1921, the Silver King Coalition Mines company Officials stated that the fire,

[56] Bunyak, Dawn. *Frothers, Bubbles and Flotation*. National Park Service. Division of National Register Programs. MPS D-1320. 1992. http://npshistory.com/publications/frothers-bubbles-flotation.pdf.

> . . .was not altogether a misfortune . . . the company feels that the way has been providentially cleared for the erection of a more efficient mill . . . because of the improvements in metallurgical processes and methods of constructing mills, [we] will erect a plant capable of effecting a much higher recover of metal at greatly reduced cost.[57]

The Silver King Mill played a fundamental role in the continued profitability and success of the mine. Distinctive within historic district, the building embodies the distinctive characteristic of the type engineered for mountain terrain with its large size and sloped profile and terraces of stepped foundation. The custom-designed and engineered frame not only supported the walls and roof but also the supporting system of driveshafts and belts that ran the machinery. The construction methods are typical of the mining industry with the design adapted for the terrain and to meet the particular requirements to process the Silver King ore. The mill building enclosed the ore treatment under one roof and enough equipment remains inside to identify the froth flotation treatment including crushing, concentrating, drying and power. Although some of the specific pieces are missing, these steps can be approximated in the ore automated ore-flow process. The Silver King Coalition Mine Historic District is the most complete collection of mining-related resources in Park City, no other mine site better conveys methods and equipment used to produce silver, lead and zinc. Overall, the collection of extant resources in the historic district retains very good historic integrity, particularly given 70 years of abandonment, and is a near complete representation of the mining operation when it was in full production.

Criterion D Significance

Archeology

The Silver King Coalition Mine Historic Site is significant under Criterion D in the Area of Archeology since archaeological deposits within the historic district boundary can be expected to reveal historic material that reflects workplace behaviors, material-use patterns, and aspects of the Silver King mining operations. The structures once bustled with around-the-clock activity so amongst the historic buildings and structures there is potential for discovery of subsurface deposits that could reveal more about the Silver King surface plant. Buried material may also have accumulated in recesses of waste rock dumps, thick boiler clinker dumps and amongst the refuse layers in waste rock dumps, where workers threw industrial refuse. Deposits amid privies and housing locations areas may include artifacts capable of enhancing current understanding of mining's social and economic structures, culture, ethnicity and miners' lifestyles including the miners' daily behavior, diet, health, workplace status. Workplace privy pits would be especially valuable because they can possess personal items representing workers in their environment. As with domestic privy pits, miners may have disposed of articles under secrecy or accidentally dropped items of value.

[57] "Fire Clears Way for New Plant," *Salt Lake Tribune,* January 29, 1921.

Minorities and women are often mute in our interpretation of the past. Archaeological survey and excavation may offer a glimpse of everyday life at the Silver King mine and give a voice to these missing workers.

Sub-surface deposits could also yield information on economic globalization and industrialization of Park City, Utah and the American West. The Silver King developed rapidly during the late nineteenth century, a tumultuous period in the expansion of worldwide capitalism. The Silver King became part of a modern world economy as silver was shipped out of Utah with prices set in the global marketplace. Meanwhile, very few essential goods and everyday items were locally manufactured (in Park City or Utah), instead arriving from other regions in America and Europe.

Research questions that the site has potential to answer or confirm include the following:

1. Does the historical and archaeological record provide evidence for the ethnicity, religion, or socioeconomic class of the miners who lived and worked at the Silver King? Is there any evidence of a more affluent "middle class" living at the site?
2. Did families and/or women ever reside, participate in activities or even visit at the Silver King? Is there any evidence of family life, and how does this compare to those deposits that might represent single male miners?
3. Is there any evidence of laundry workers, cooks or other work typically performed by women or ethnic minorities such as Chinese?
4. What were the diet, health and recreational pursuits of the miners working or living at the Silver King?
5. Is the integration of the local economy into the global marketplace reflected by the archeological evidence? What are the origins of the archeological remains of consumer goods or miners tools?

Summary

The Silver King Coalition Mine Historic District, Park City, Summit County, Utah is significant under Criteria A, C and D. The large-scale industrial mining complex, the most productive in Park City and, today, the most complete collection of mining-related resources in Park City, is significant under Criterion A in the area of Industry*, s*ignificant under Criterion C in the area of Engineering and significant under Criterion D for the potential of historic archaeological deposits to yield important information in the areas of Industry and Social History. The period of significance is 1891, when the mine first started operation, to 1953, when surface operations ceased.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

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Historic Site Inventory of Silver King Mine Site—Boarding House.
Historic Site Inventory of Silver King Mine Site—Boarding House Vault.
Historic Site Inventory of Silver King Mine Site—Change House.
Historic Site Inventory of Silver King Mine Site—Fire Hose Shacks and Stone Wall.
Historic Site Inventory of Silver King Mine Site—Hoist House.
Historic Site Inventory of Silver King Mine Site—Stores Dept Building.
Historic Site Inventory of Silver King Mine Site—Water Tanks.
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Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
__X__ recorded by Historic American Engineering Record # HAER UT-22-A through E
____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

__X__ State Historic Preservation Office
____ Other State agency
____ Federal agency
__X__ Local government
__X__ University
__X__ Other
Name of repository: Park City Historical Society

Historic Resources Survey Number (if assigned): _____

10. Geographical Data

Acreage of Property: 31 acres

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)

1. Latitude: 40.632952° Longitude: -111.516363°
2. Latitude: 40.633108° Longitude: -111.510764°
3. Latitude: 40.631956° Longitude: -111.509075°
4. Latitude: 40.630181° Longitude: -111.509239°
5. Latitude: 40.630283° Longitude: -111.515272°

Or UTM References
Datum (indicated on USGS map):

☐ NAD 1927 or ☐ NAD 1983

1. Zone: Easting: Northing:
2. Zone: Easting: Northing:

Verbal Boundary Description (Describe the boundaries of the property.)

This boundary is a smaller polygonal segment of two larger tax parcels. The 2,470 acre PCA-S-98-PCMR-1 parcel is owned by TCFC Leaseco LLC and includes the shaft house, change house, warehouse, water tanks A& B. The 145.4 acre PCA-S-98-PCMR parcel is owned by United Park City Mines Co. and includes the mill, transformer house, sampler building foundation walls, water tanks D & E and the waste rock dump. The boundary of the Silver King Coalition Mine Historic District is an area that encompasses the current visible extent of the historical mining site. The boundary contains physical remnants of the mine site—the water tanks, mill, aerial tramway towers, shaft house, change house, warehouse, transformer house and waste dump. Archaeological remains from other processing buildings, now gone, may possibly be found within the boundary area as well. See map for detailed boundary.

Boundary Justification (Explain why the boundaries were selected.)

The boundary includes the extant buildings, structures and site features (however, only two towers of the long, linear aerial tramway are included) that were historically associated with the Silver King Coalition Mine site, along with the immediate surrounding area sufficient to convey the historical setting of the site.

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11. Form Prepared By

name/title: Sandra Morrison
organization: prepared for Friends of Ski Mountain Mining History
street & number: 7621 Vista Circle
city or town: Park City state: Utah zip code: 84098
e-mail: randsmor@xmission.com
telephone: 435-901-0403
date: September 19, 2024

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12. Owner

name: United Park City Mines Co.
contact: David Smith
street & number: P.O. Box 1450
city or town: Park City state: UT zip code: 84060
e-mail: dsmith@taliskermountain.com
telephone: 435-200-8400

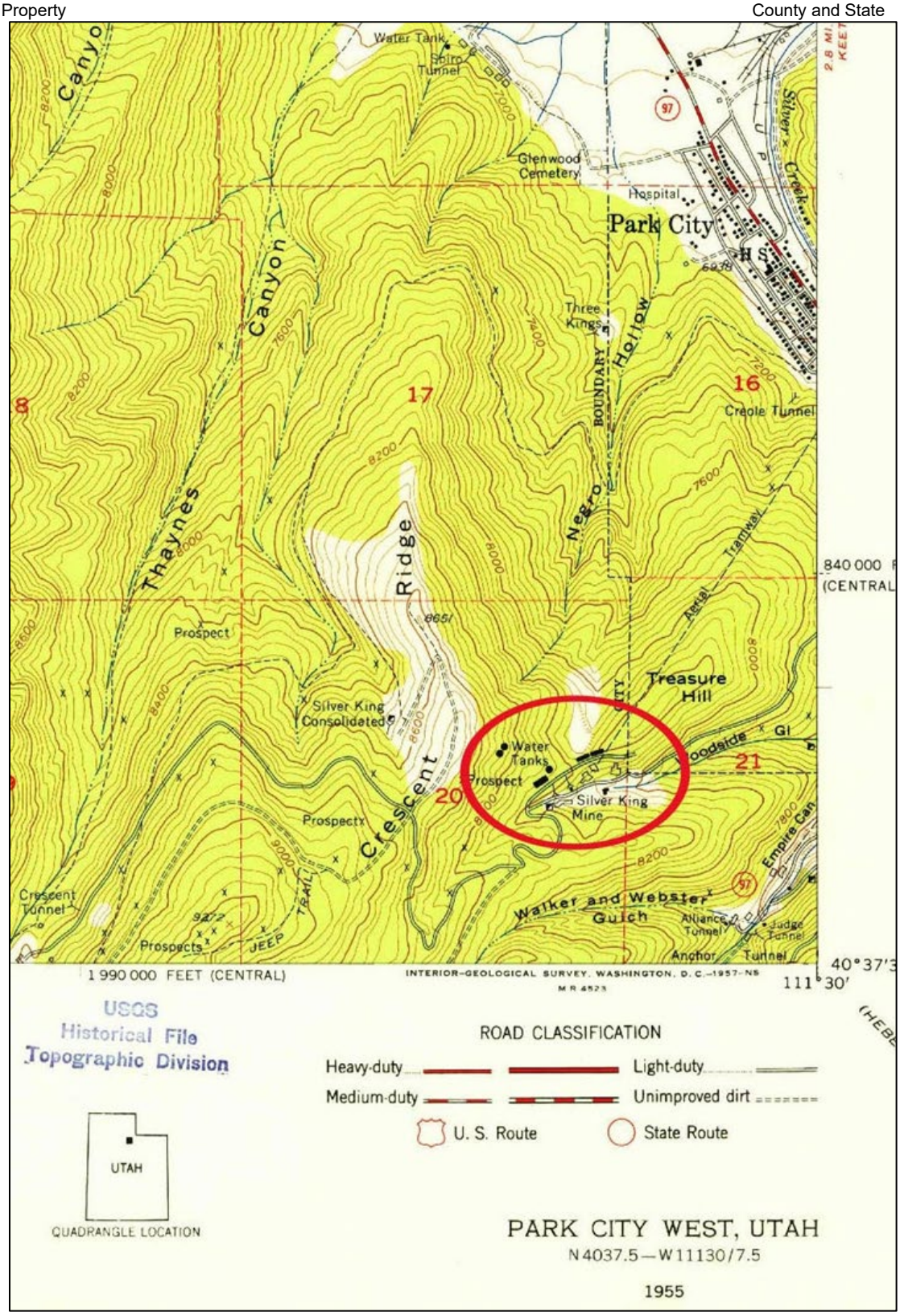
Maps and Photographs (see separate photographs word doc)

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.

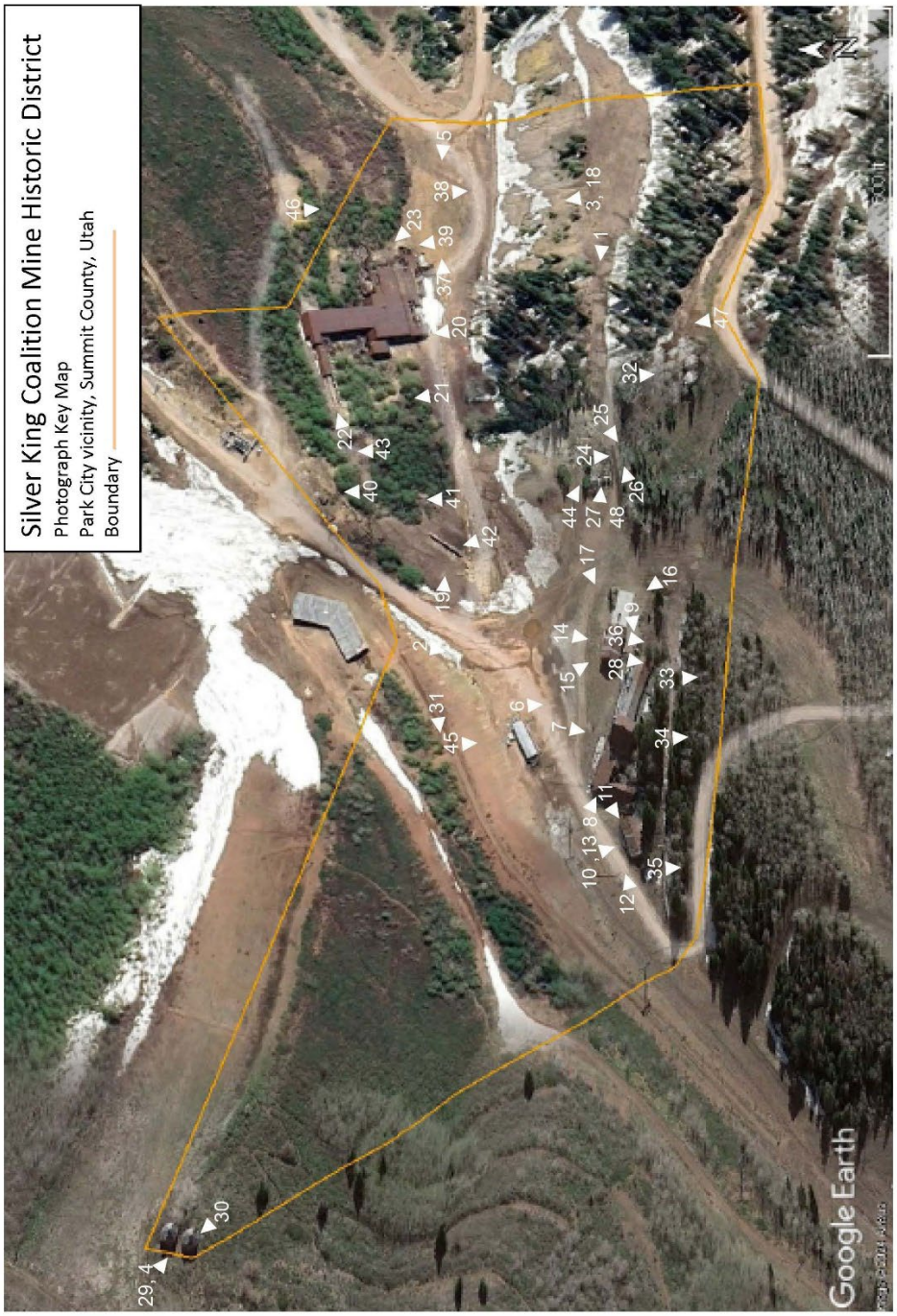
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.



Map 1. Silver King Coalition Mine Historic District location

Map 2. Silver King Coalition Mine Historic District coordinates boundary

Map 3. Silver King Coalition Mine Historic District boundary and features



Map 4. Silver King Coalition Mine Historic District photo key

Photographs
Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property: Silver King Coalition Mine Historic District

City or Vicinity: Park City County: Summit State: Utah

Photographer: Sandra Morrison

Date Photographed: November 2023, May 2024

Description of Photograph(s) and number, include description of view indicating direction of camera:

Photo No. 1 Overview and physical environment of the site. Camera facing west

Photo No. 2 Overview and physical environment of the site. Camera facing south

Photo No. 3 Overview and physical environment of the site. Camera facing north

Photo No. 4 Overview and physical environment of the site. Camera facing east

Photo No. 5 Overview and physical environment of the site. Camera facing west.

Photo No. 6 North (primary) elevation of the Silver King Shaft House. Camera facing south

Photo No. 7 Detail of Silver King Shaft House windows. Camera facing south

Photo No. 8 West elevation of the Silver King Shaft House. Camera facing east

Photo No. 9 East and north elevations of the Silver King Shaft House. Camera facing west

Photo No. 10 North (primary) elevation of the Change House. Camera facing south

Photo No. 11 East elevation of the Change House. Camera facing south-west

Photo No. 12 West elevation of the Change House. Camera facing north-east

Photo No. 13 Detail of window and front door of the Change House. Camera facing south

Photo No. 14 North (primary) elevation of the Warehouse. Camera facing south

Photo No. 15 West and north elevations of the Warehouse. Camera facing south-east.

Photo No. 16 South and East elevations of the Warehouse. Camera facing north-west

Photo No. 17 East and north elevations of the Warehouse with Shaft house in rear. Camera facing south-west

Photo No. 18 South (primary) elevation of the Silver King Mill. Camera facing north

Photo No. 19 West elevation of Silver King Mill. Camera facing east.

Photo No. 20 South and west elevations of Silver King Mill. Camera facing north-east.

Photo No. 21 South elevation of Silver King Mill. Detail showing covered tramway with concrete ore loading bins below. Camera facing north.

Photo No. 22 Tramway road and unloading at the Silver King Mill. Camera facing east.

Photo No. 23 Detail of east elevation showing boiler room, chimney, coal bin and water tank. Camera facing north-west.

Photo No. 24 North (primary) elevation of the Transformer House. Camera facing south

Photo No. 25 East and north elevations of the Transformer House. Camera facing southwest.

Photo No. 26 South elevation (constructed into the hillside of the Transformer House. Camera facing north

Photo No. 27 Overview of waste rock dump, transformer house and substation located east of the shaft house. Camera facing east.

Photo No. 28 Coal bunker with corner of Shaft House visible on right. Camera facing south.

Photo No. 29 West elevation of water Tanks A & B. Camera facing east

Photo No. 30 East elevation of water Tanks A & B. Camera facing northwest.

Photo No. 31 East elevation of Boarding House Vault with Water Tanks A & B uphill. Camera facing west.

Photo No. 32 North elevation of water Tanks C, D & E. Camera facing south

Photo No. 33 North elevation of Fire Hose Shack 1. Camera facing south

Photo No. 34 North elevation of Fire Hose Shack 2. Camera facing south

Photo No. 35 North elevation of Fire Hose Shack 3. Camera facing south.

Photo No. 36 North elevation of Fire Hose Shack 4. Camera facing south

Photo No. 37 West elevation of Dorr Thickener Tank with Silver King Mill on left. Camera facing east.

Photo No. 38 North elevation of Dorr Thickener Tank entrance with waste dump in background. Camera facing south.

Photo No. 39 South elevation of Silver King Mill Water Tank. Camera facing north

Photo No. 40 South elevation of Mill Fire Hose Shack 1 and stone wall. Camera facing north

Photo No. 41 South elevation of Mill Fire Hose Shack 2. Camera facing north

Photo No. 42 East elevation of Sampler Building Foundation Walls. Camera facing north.

Photo No. 43 North elevation of Aerial Tramway Tower 39 with Shaft House in background. Camera facing south.

Photo No. 44 East elevation of Surface Transformer Substation. Camera facing east.

Photo No. 45 South elevation of Bonanza Chairlift with Shaft House and Change House in background. Camera facing south.

Photo No. 46 North elevation of Waste Dump. Camera facing south.

Photo No. 47 Remains of collapsed Water Tank C. Camera facing north.

Photo No. 48 Haul Road heading east to waste dump (on the right and beyond the substation). Camera facing east.