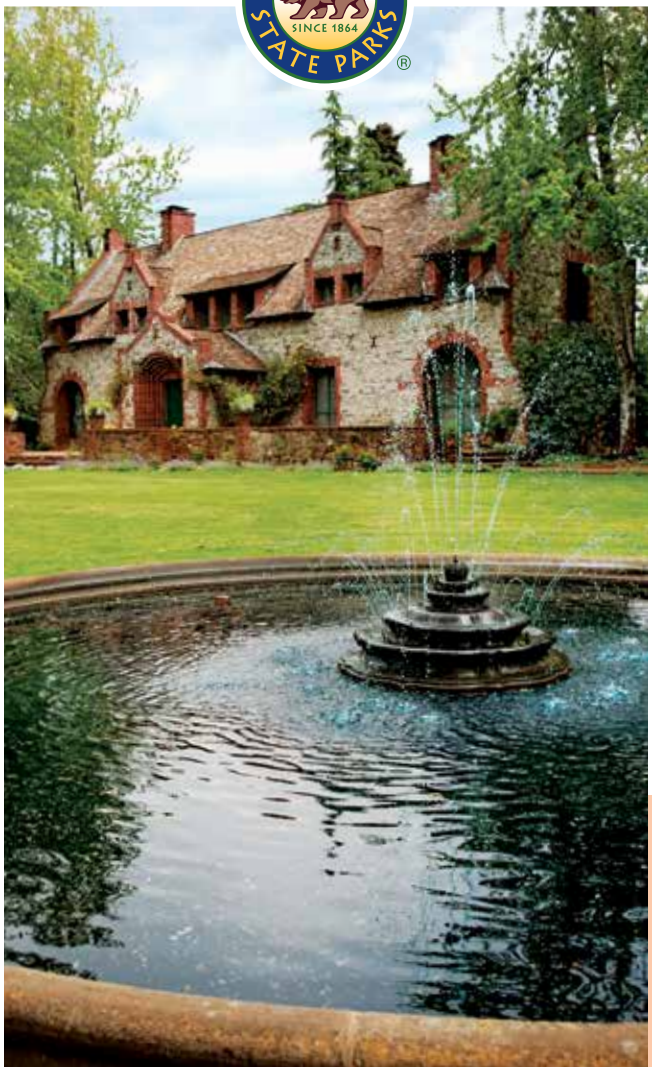
# Empire Mine

## State Historic Park



## Our Mission

The mission of California State Parks is to provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.

California State Parks supports equal access. Prior to arrival, visitors with disabilities who need assistance should contact the park at **(530) 273-8522**. If you need this publication in an alternate format, contact **interp@parks.ca.gov**.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**Empire Mine State Historic Park**
**10791 East Empire Street**
**Grass Valley, CA 95945**
**(530) 273-8522**


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*Empire Mine State Historic Park—site of one of the largest, richest, and longest-operating (1850-1956) gold mines in California—produced more than eight billion dollars in gold by today's standards.*

*ca. 1898*

**Empire Mine State Historic Park preserves what was once California's richest gold-producing mine.** Located in the western Sierra Nevada 50 miles from Sacramento, this 856-acre park sits among beautifully forested foothills at elevations of 2,500 to 2,900 feet. Its 367 miles of deep mine shafts form a maze that is impressive to this day.

## PARK HISTORY

### Native Americans

At least 10,000 years ago, the western Sierra Nevada was populated by the Foothill Nisenan. Their lands were made up of the Yuba, American, and Bear River drainages and parts of the Feather River.

The 1848 gold discovery brought tens of thousands of fortune-seekers to California, devastating the lives of the Nisenan. These so-called "Forty-niners" took the lands that the Nisenan had occupied for thousands of years and claimed it for mining, farming, and logging. Many Nisenan died from exposure to smallpox, measles, and other diseases to which they had no immunity.

Today, Nisenan descendants live on and near traditional tribal lands, teaching their culture and language to a new generation.

### New Mining Methods

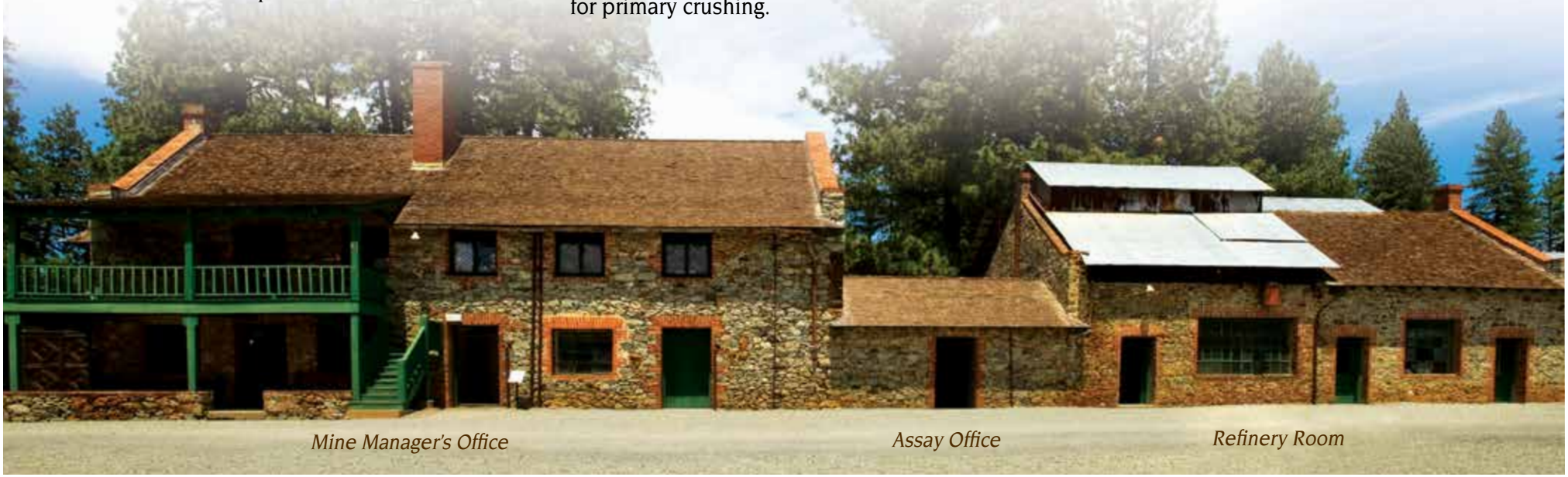
In 1850, prospectors found gold-bearing quartz in what is now Grass Valley. Traditional placer-mining methods, in which water was used to wash gold deposits from the sand or gravel of stream beds, was ineffective in this area. Instead, the miners used "hardrock" mining methods, in which men in buckets were lowered into deep shafts (coyote holes) resembling water wells to chip and drill through the rock. After filling the drill holes with black powder, they detonated it, loaded the blasted rock into ore cars, and took it to the mine headframe for primary crushing.

*ca. 1890*

At the stamp mill, the crushed ore, mixed with water, was placed on copper plates coated with mercury.

The mercury-coated copper combined with "free" gold to form an amalgam. Water washed away any impurities, and the cleaned amalgam went to the refinery for further processing.

In 1905 the Empire adopted a more efficient mining method. In this process, cyanide was used to dissolve gold while it



*Mine Manager's Office* *Assay Office* *Refinery Room*

was still embedded in the quartz. The gold could then be leached out of the quartz ore in a liquid form. The cyanide method is still in use around the world.

### Modernization and Mules

Until mules were introduced, miners moved the ore-laden cars manually. Known as one of the most efficiently operated gold mines in the U.S., the Empire counted among its improvements the use of mules to pull ore cars. The mules lived in underground barns until they became too old to work.

The Empire Mine did not begin to prosper until 1869, after San Francisco businessman William B. Bourn, Sr., acquired a controlling interest. Production dropped in 1874, followed by Mr. Bourn's sudden death that same year.

### William Bowers Bourn, Jr.

In 1879, Mr. Bourn's 22-year-old son, William B. Bourn, Jr., took over management of the mine to keep it from closing. Fortunately, he was able to lead the mine back to profit. He was later able to push several mine shafts past the 1,200-foot level that had been considered the maximum depth.

*William Bourn, Jr.*

### George W. Starr

Mr. Bourn's 19-year-old cousin, George W. Starr, began work at the mine in 1881. By 1887 he had gone from loading rocks and ore into cars (mucker) to superintendent. In 1893 Starr—by then considered a mining genius—left to work in South Africa's gold mines. When Starr visited San Francisco a few years later, Bourn convinced him to return to the Empire, where Starr worked another 30 years.

After 1929 the Empire Mine—first combined with the North Star Mine as Empire-Star Mines Ltd. and then sold to Newmont Mining—produced enough gold to keep the Great Depression of the 1930s just a story in the local newspapers.

### End of the Empire

The mine closed during World War II when many miners enlisted. In 1945 the mine reopened, but gold was still at its 1934 price—$35 per troy ounce. Unfortunately, it then cost more to bring gold to the surface than it was worth. However, mining efforts continued for another decade. In 1956, when the Empire closed, it had yielded nearly six million troy ounces of gold—a true bonanza.

### Geology

Gold deposits of the Grass Valley mining district occur in quartz veins deep under ground. Granite bodies called plutons were formed when molten rock (magma) slowly cooled below the surface of the earth. During the final stages of cooling, liquids with dissolved silica and gold pushed their

*ca. 1870*

### The Cornishmen

Cornish miners, who arrived from Cornwall, England, around the mid-1850s, brought with them a well-honed work ethic and 1,000 years of history as hard rock miners. They also brought the Cornish pump, which allowed them to pump water out of the 1,200-foot mine shafts.

When shafts were drilled below the earth's water table, they would fill with water. Each Cornish pump could draw 18,000 gallons of water per hour from the shafts, replacing manual mud diggers. Between the late 1870s and 1956, when the mine closed, Cornishmen provided the bulk of the mine's labor force.

*Crystalline gold from Empire's Pennsylvania Mine*

ca. 1940

way into the fractures, shear zones, and fault lines of older rocks and hardened, forming the solid veins of gold found in quartz.

These geologic actions, happening miles below the surface of the ancestral Sierra Nevada, were later uplifted and revealed by tectonic movement.

## ACCESSIBLE FEATURES

Due to historic doorway widths and steep stepwells, not all exhibits and attractions are accessible. To arrange for transportation, to borrow wide-tire wheelchairs, or for information on alternative entries or lifts, ask at the visitor center, call the park, or visit **http://access.parks.ca.gov**.

ca. 1940

**Exhibits/Programs**—The visitor center and museum are generally accessible.

**Parking/Restrooms**—Parking on the south side of Empire Street allows close and safe access. Accessible restrooms are near the south parking lot.

**Mine shops and exhibits area**—Routes through the park include some paved walkways, some sloping terrain, and shifting gravel. Restrooms are generally accessible.

**Empire Cottage**—The first floor of the cottage interior, generally accessible except for one tight hallway, is shown by guided tour only. Formal gardens may be seen from above at the ramp to the cottage.

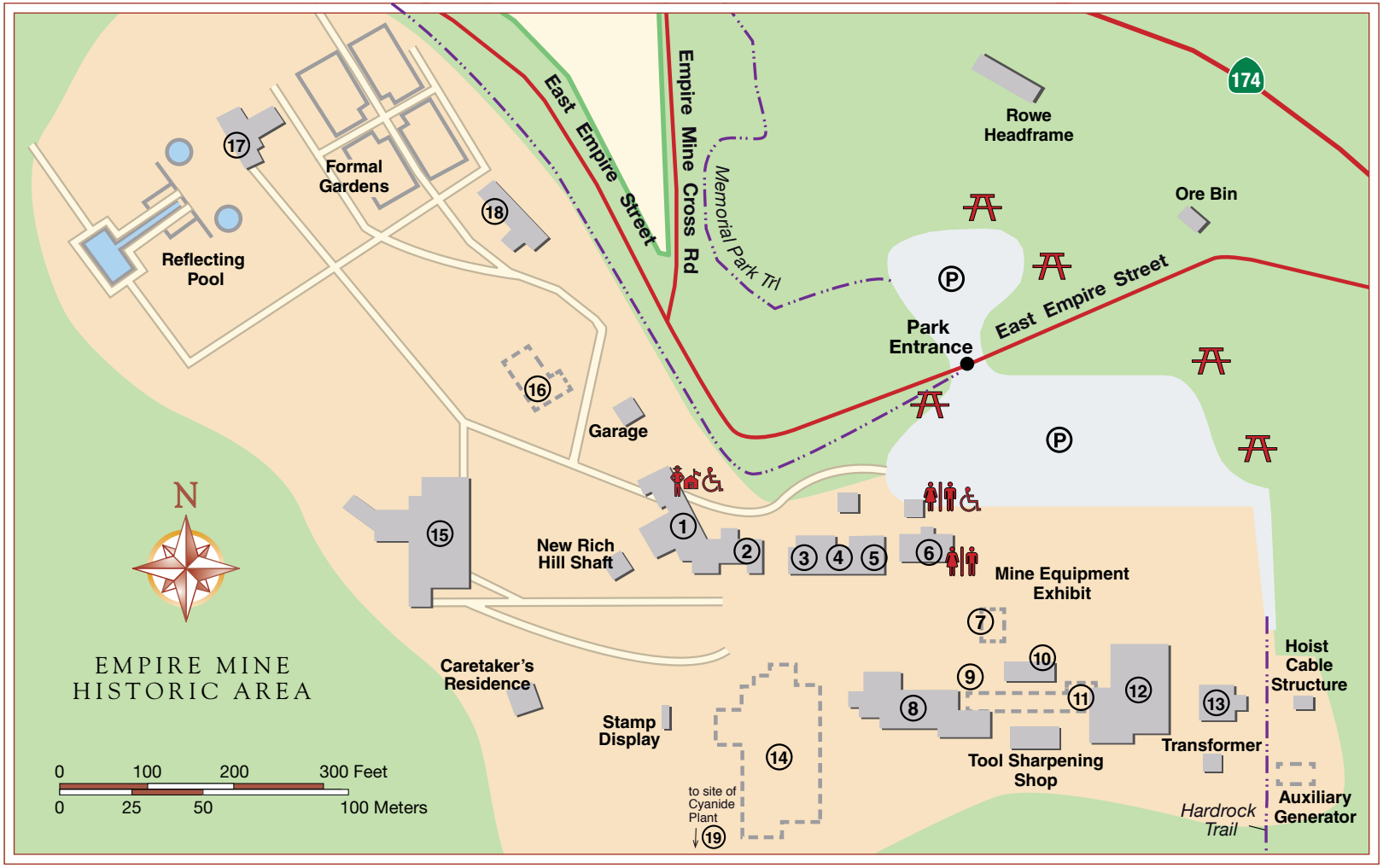
## NEARBY STATE PARKS

- Malakoff Diggins State Historic Park
  23579 North Bloomfield Park Road
  Nevada City 95959 (530) 265-2740
- South Yuba River State Park
  17660 Pleasant Valley Road
  Penn Valley 95946 (530) 432-2546

## PLEASE REMEMBER

- Stay on marked trails.
- To ensure public safety, some areas are fenced and closed to the public.
- Drinking water and restrooms are not available along the trails.
- Watch out for poison oak, ticks, and rattlesnakes.
- Roads and trails allow dogs on a six-foot leash only. Except for service animals, dogs are not allowed inside historic buildings or in mine shafts.
- All natural and cultural features are protected by law and may not be disturbed or removed.

ca. 1940




## Legend

- Major Road
- Paved Road
- Paved Path
- Hiking Trail
- Multi-Use Trail (Hike/Bike/Horse)
- Historic Area
- Historic Building Site
- Historic Building
- Accessible Feature
- Horse Staging Area
- Mine
- Picnic Area
- Restroom
- Parking
- Visitor Center

## BUILDINGS AND SITES

### 1. Visitor Center and Model Room

The former carriage and automobile house is now the visitor center. Gold samples are on display.

The sprawling scale model display of the Empire-Star Mine complex dates back to 1938. The once-secret model was regularly updated to reflect the growth of the mine.

### 2. Mining Engineer's Office

After the 1929 merger with North Star Mine, this office housed the new engineering staff hired to plan and direct the mine's growth.

### 3. Mine Manager's Office

This restored 1898 office represents the ownership periods of both William Bourn, Jr. and the Newmont Mining Corporation.

### 4. Assay Office

Values were assigned to each gold sample here; it now serves as a rescue station.

### 5. Refinery Room

Mercury from the stamp mill was recycled, and the remaining sponge-shaped gold nuggets were cast into 89-pound bars and taken to San Francisco's U.S. Mint.

After the cyanide process was installed in 1910, additional furnaces more efficiently recovered the gold and silver.

**6. Warehouse**
Reconstructed by volunteers in 1989, this former hay- and supply-storage area is now a meeting and training facility.

**7. Welding Shop Site**
After the mine closed, the old metal shop, where equipment had been fabricated and repaired, was torn down and sold.

**8. Machine Shop**
By 1886, Pelton water wheels provided energy to run operations and lights. The leather belts and ceiling-mounted shafts and wheels are still in place.

**9. Shaft Viewing Area**
The ore "skips" that moved the rock to waiting ore cars sped through this portal at 600 and 1,200 feet a minute. The deepest shaft is more than 5,000 vertical feet down.

**10. Blacksmith Shop**
In the early days, equipment—from door hinges to pump covers and stamps—was fabricated in the company shops.

**11. Headframe Site**
The mine's headframe, demolished in 1969, supported a track that carried men, equipment, and rock to and from the mine. From the headframe's crusher, ore went to the stamp mill for further processing.

**12. Compressor Building**
The compressors pumped air into the mine to ventilate it, and to operate machinery.

**13. Hoist House**
Here, skilled hoistmen raised and lowered men, supplies, waste rock, and ore to and from the various mine levels.

**14. Stamp Mill Site**
Little remains of this building. Early in the process, its eighty stamps smashed the raw ore, which was then washed over mercury-coated tables to capture the gold.

**15. Empire Clubhouse**
William Bourn, Jr. built the clubhouse for use by his supervisory personnel and as a place to entertain visiting guests. The 1905 clubhouse is still used by the Empire Country Club and for park special events.

**16. Starr Home Site**
Only the foundation of Ophir Cottage, George Starr's home, remains. Flames destroyed it on October 28, 1935, despite all efforts to save it.

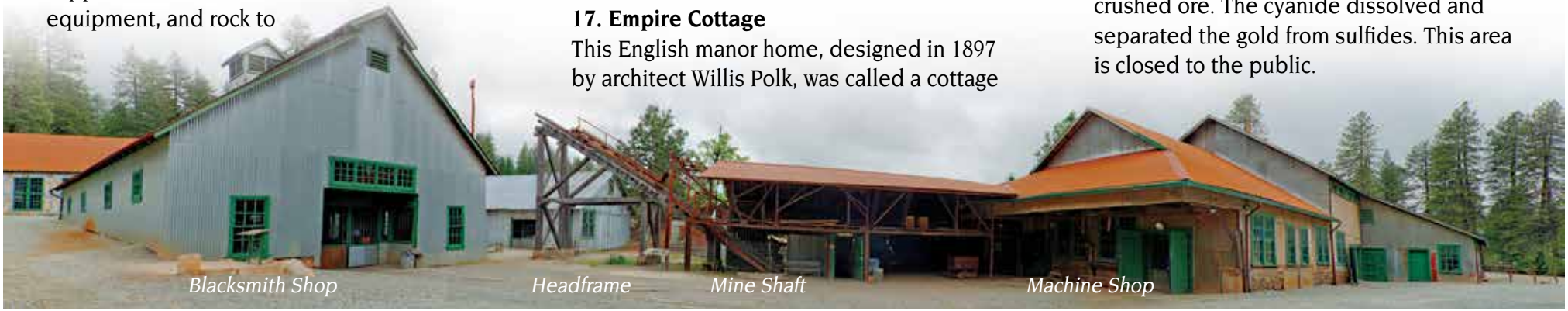
**17. Empire Cottage**
This English manor home, designed in 1897 by architect Willis Polk, was called a cottage to distinguish it from Mr. Bourn's other homes. The main floor holds the kitchen, service rooms, living room, dining room, and a reading room later used as a bedroom by Mr. Bourn, Jr. Four bedrooms and two baths are on the second floor. The servants' rooms and a bathroom were located above the kitchen.

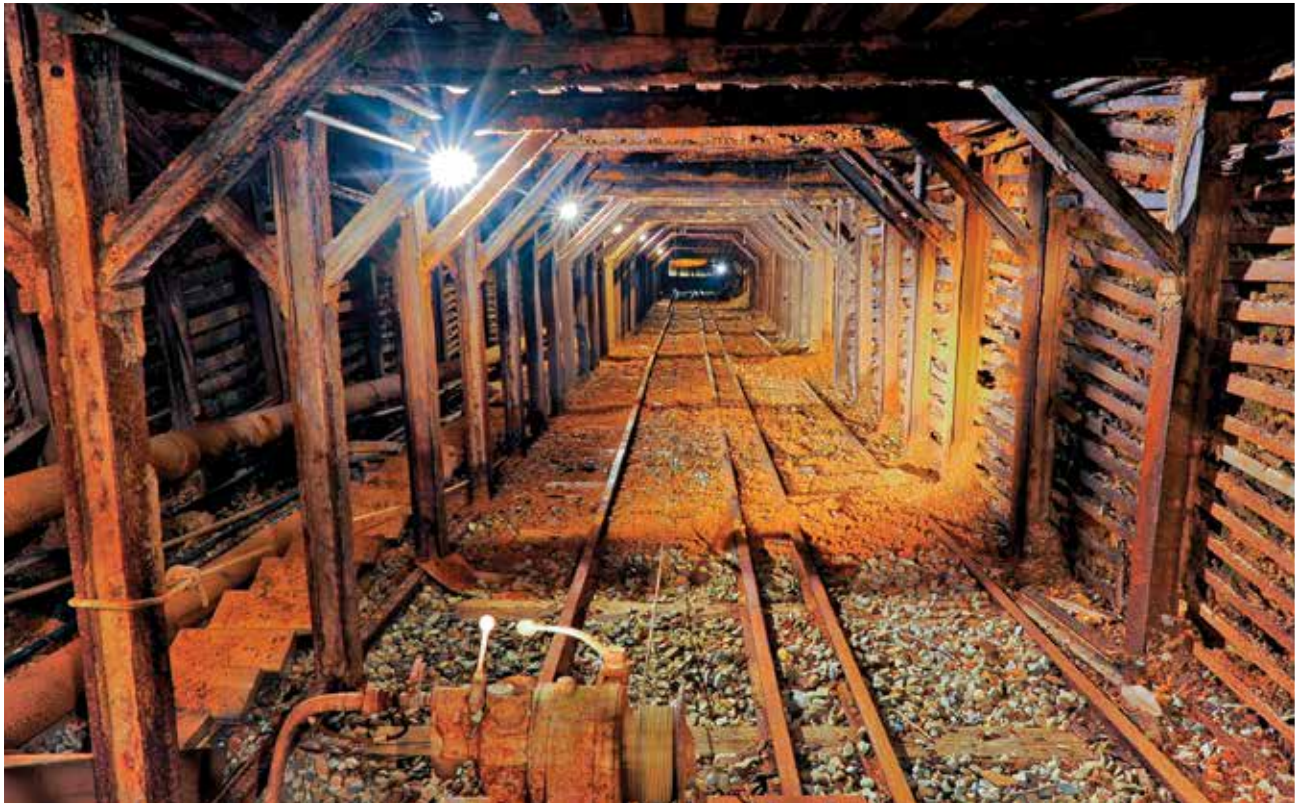
*Garden and greenhouse*

*Heirloom roses*

**18. Gardener's House and Greenhouse**
The Bourns loved trees and flowers of all kinds. The nearly 1,000 vintage rose bushes seen in the formal garden and on the landscaped grounds were cultivated in their greenhouse.

**19. Cyanide Plant Site (1910)**
Earlier methods of recovering gold were replaced by adding sodium cyanide to crushed ore. The cyanide dissolved and separated the gold from sulfides. This area is closed to the public.


*Blacksmith Shop* *Headframe* *Mine Shaft* *Machine Shop*



## WALKING TRAILS

The Union Hill, Hardrock, and Osborn Hill Loop trails wind through nearly a century of hardrock mining history. To ensure public safety, some areas of the park are fenced and closed to the public.

### Union Hill Trails

These one- to three-mile trails feature wildflowers in spring.

**Pipeline Trail**—This trail led from the Empire Mine to the Northstar powerhouse.

**Indian Ridge Trail**—This trail was once used by the Nisenan/Maidu people.

**Union Hill Trail**—This trail loops westward from the north Pipeline Trail to the edge of the park next to the town of Grass Valley.

### Hardrock Trail Area

This easy two-mile walk circles much of the Empire's "outback."

**Hardrock Trail**—Along this road, trucks moved waste rock. A wooden pedestrian bridge crosses Little Wolf Creek.

**Stamp Mill Foundation**—On this site, California's first stamp mill crushed gold-bearing quartz, treated it with mercury, and turned it into almost pure gold.

**Cyanide Plant Site (closed to visitors)**—Cyanide dissolved gold-bearing sulfides, allowing the recovery of more gold.

**Trail Fork (Osborn Hill Trails)**—From here, Osborn Hill Loop climbs upward, ending near several abandoned mines.

**Orleans Stamp Mill Foundation**—This stamp mill was in operation until the early 1900s.

**Orleans Mine**—Under the leadership of William Bourn Jr. (and later the Newmont Mining Corporation), this small claim was absorbed by the Empire Mine.

**Pennsylvania Mine**—The Pennsylvania Mine site is marked by the concrete foundations of its compressor house.

**W.Y.O.D. Mine**—The "Work Your Own Diggins" mine leased claims to miners.

**Mule Corral**—This old corral was home to the mules before they were lowered into the mine.

**Sand Dam**—This waste rock area was high and strong enough to support a narrow-gauge rail line across Little Wolf Creek.

### Osborn Hill Loop Trail

This demanding segment of the Hardrock Trail leads to some abandoned mine sites.

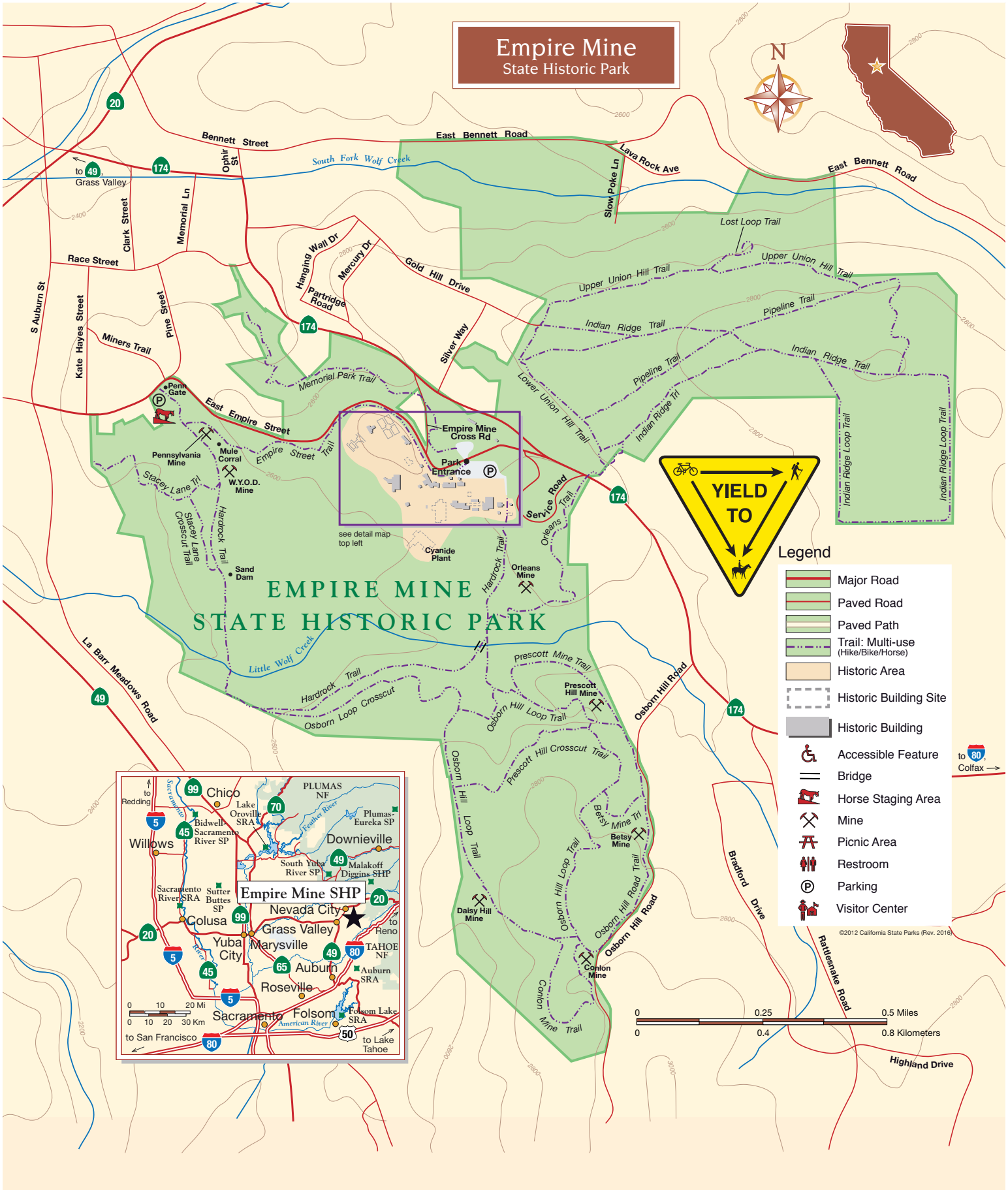
**Prescott Hill Mine**—To the left of the mine's shaft foundation is the headframe foundation.

**Betsy Mine**—The hoist and pump works of this mine were removed before 1900.

**Conlon Mine**—This mine, difficult to keep drained, closed in 1908.

**Daisy Hill Mine**—Two piles of waste rock mark the site of the small Daisy Hill Mine.

This park is supported in part through the nonprofit Empire Mine Park Association
10787 East Empire St.
Grass Valley, CA 95945
**www.empiremine.org**


Empire Mine
State Historic Park
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EMPIRE MINE
STATE HISTORIC PARK
Bennett Street
East Bennett Road
South Fork Wolf Creek
Lava Rock Ave
Slow Poke Ln
Ophir St
Clark Street
Memorial Ln
Race Street
S Auburn St
Kate Hayes Street
Pine Street
Miners Trail
Hanging Wall Dr
Mercury Dr
Partridge Road
Gold Hill Drive
Silver Way
Lost Loop Trail
Upper Union Hill Trail
Pipeline Trail
Indian Ridge Trail
Indian Ridge Loop Trail
Lower Union Hill Trail
Memorial Park Trail
Penn Gate
East Empire Street
Pennsylvania Mine
Mule Corral
W.Y.O.D. Mine
Empire Street Trail
Stacey Lane Trl
Stacey Lane Crosscut Trail
Hardrock Trail
Sand Dam
Empire Mine Cross Rd
Park Entrance
see detail map top left
Cyanide Plant
Service Road
Orleans Trail
Orleans Mine
Little Wolf Creek
Prescott Mine Trail
Prescott Hill Mine
Osborn Loop Crosscut
Osborn Hill Loop Trail
Prescott Hill Crosscut Trail
Osborn Hill Road
Betsy Mine Trl
Betsy Mine
Daisy Hill Mine
Conlon Mine
Conlon Mine Trail
Bradford Drive
Rattlesnake Road
Highland Drive
La Barr Meadows Road
to 49, Grass Valley
to 80, Colfax
YIELD TO
Legend
Major Road
Paved Road
Paved Path
Trail: Multi-use (Hike/Bike/Horse)
Historic Area
Historic Building Site
Historic Building
Accessible Feature
Bridge
Horse Staging Area
Mine
Picnic Area
Restroom
Parking
Visitor Center
©2012 California State Parks (Rev. 2016)
0 0.25 0.5 Miles
0 0.4 0.8 Kilometers
to Redding
Chico
Willows
Bidwell-Sacramento River SP
Lake Oroville SRA
PLUMAS NF
Plumas-Eureka SP
Downieville
South Yuba River SP
Malakoff Diggins SHP
Sacramento River SRA
Sutter Buttes SP
Empire Mine SHP
Nevada City
Colusa
Grass Valley
Yuba City
Marysville
Auburn
TAHOE NF
Auburn SRA
Roseville
Sacramento
Folsom
Folsom Lake SRA
American River
to Reno
to San Francisco
to Lake Tahoe
0 10 20 Mi
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