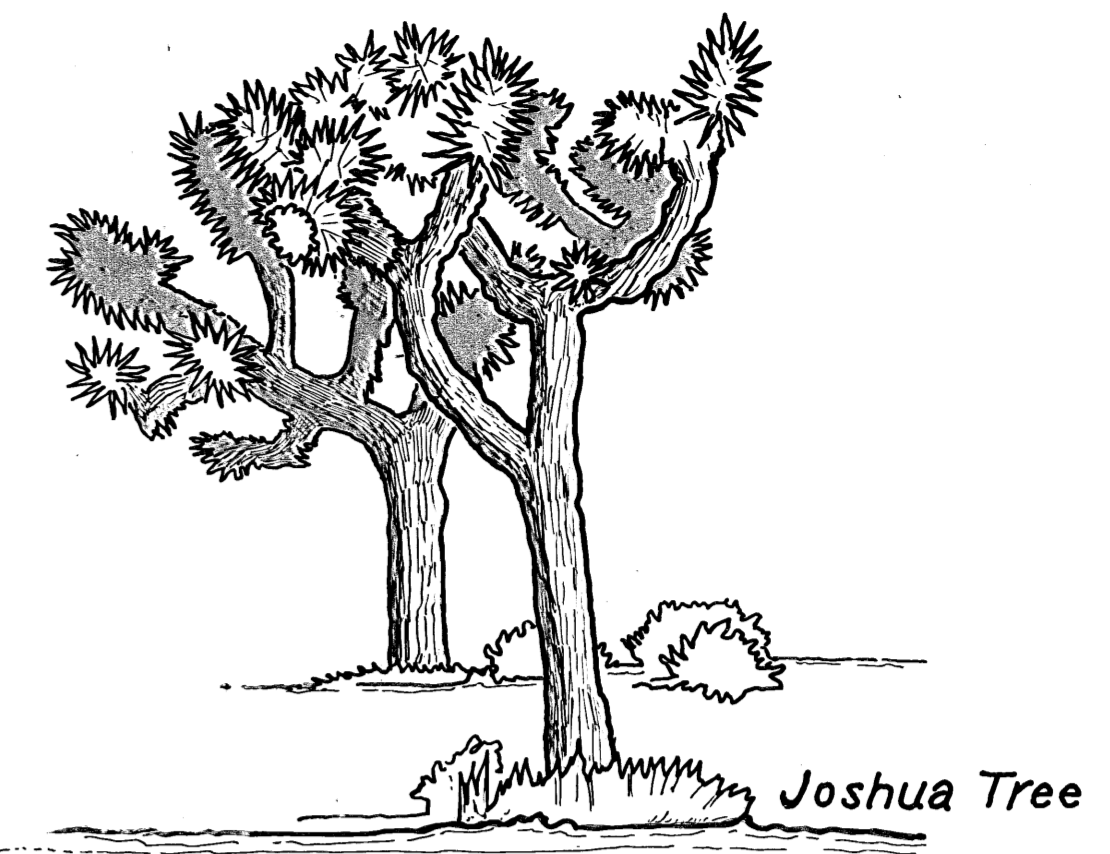


WALL STREET GOLD MILL

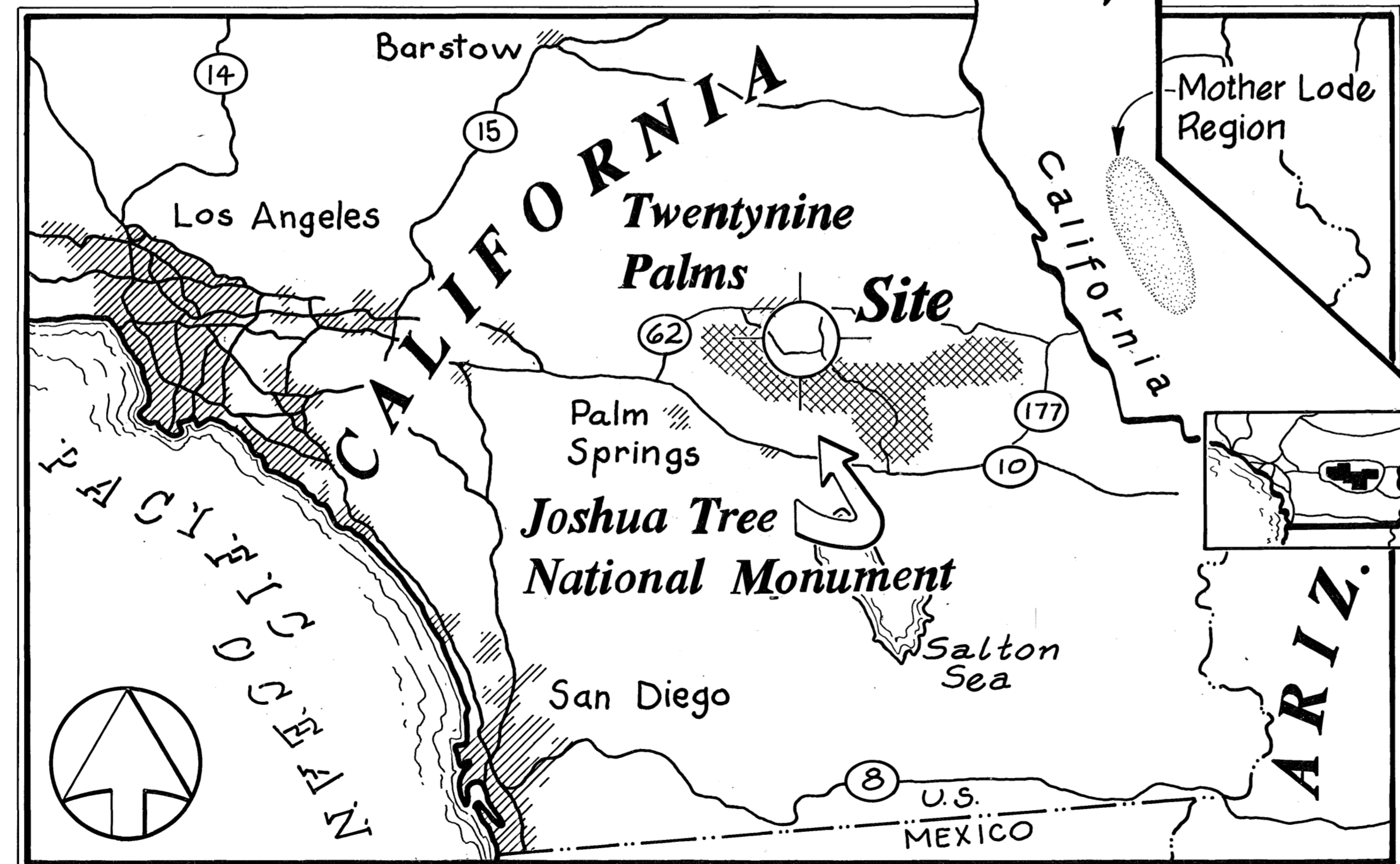
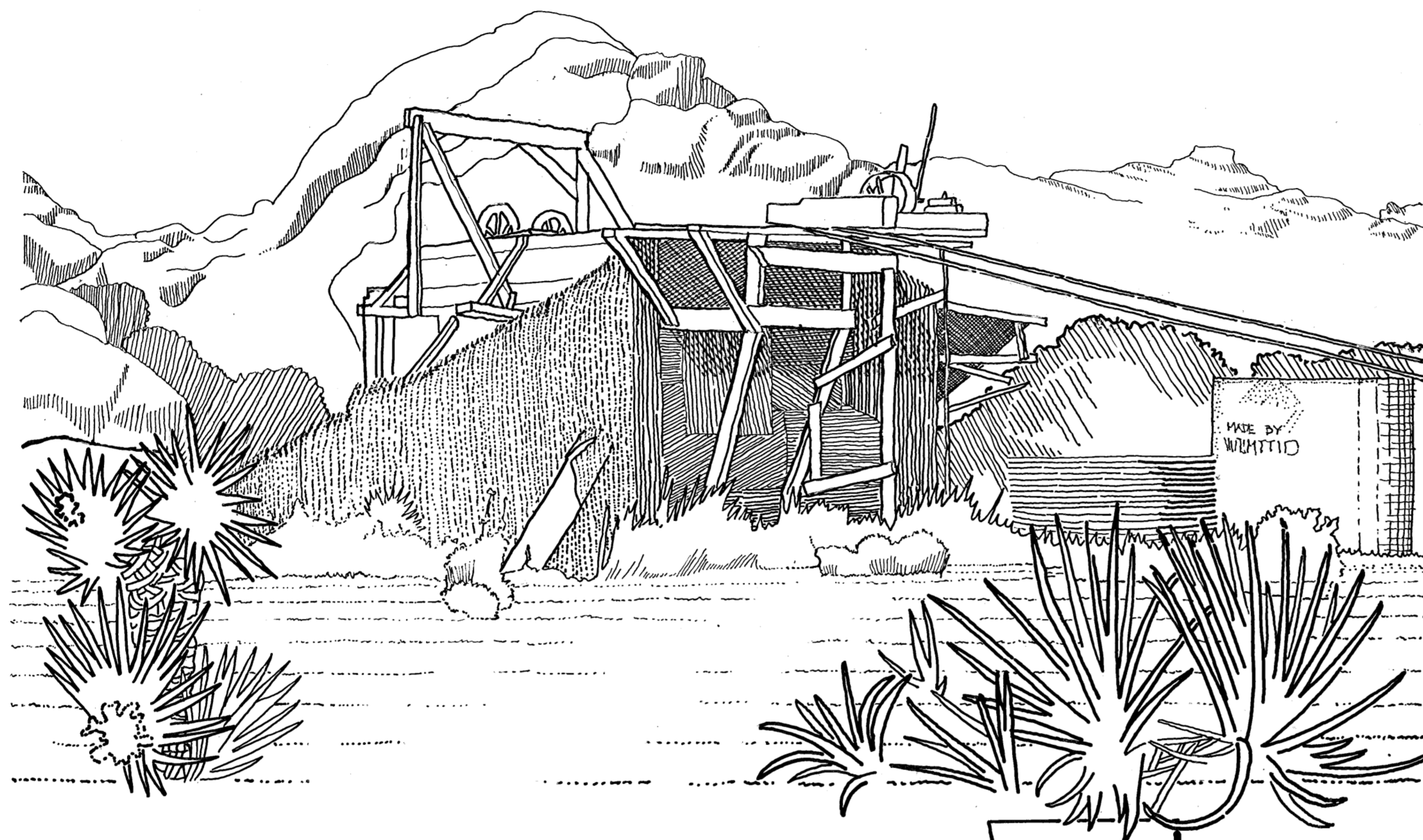
Joshua Tree National Monument 1931.



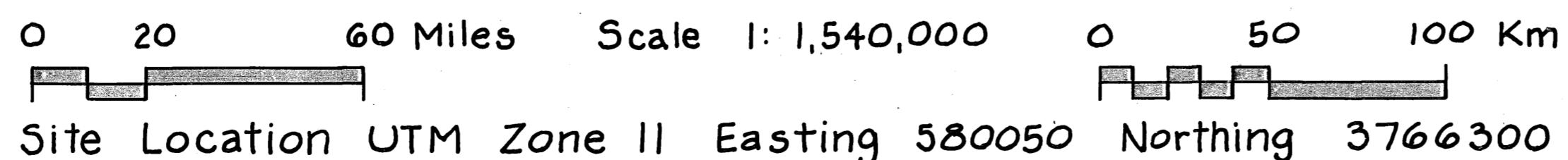
The Wall Street Gold Mill is the only mill in this region which is virtually complete and potentially operable. Because of that, and its local technological and mechanical significance, the mill is on the National Register of Historic Places. The two-stamp mill used amalgamation and concentration to remove gold from hard rock ore.

Features on the site include the mill machinery, the building which houses it, the well which supplied water for the mill's operation, and the well pump. William F. (Bill) Keys, long-time desert resident and small mine operator, opened the mill in 1931. It is south of Twentynine Palms, California, in the Mojave Desert. The site became part of Joshua Tree National Monument in 1971.

During the Depression, mining regions experienced a second gold rush. As miners arrived, Keys observed the need for a mill. He selected a site which had water, and filed a mill site claim on a five acre parcel in 1930. Keys gathered machines from mines and mills in the area, and assembled them to create the Wall Street Mill. He also added equipment after he opened the plant. As a result, the machinery in the Wall Street Mill dates from circa 1897 to the 1930s.



LOCATION MAP



Keys operated the plant primarily as a custom mill, processing ore for other small miners for a fee. He also handled ore from his mines. The small size of the two-stamp Wall Street Mill was appropriate for the small scale mining that was conducted in the region. Keys worked the mill intermittently until 1942. His son, Willis, operated it in 1949, and Bill ran the plant for about a month in 1966. The Wall Street Mill has been closed since that time.

Heavy timber framing supports the ore chute, ore crusher, and the two-stamp mill. The vernacular construction that surrounds this heavy timber core is an eclectic range of wood framing members and corrugated sheet metal. Deck floors are wood planking and floors on grade are dirt. The machinery and equipment include a jaw crusher from the Fulton Engine Works, a two-stamp mill built by the Baker Iron Works in 1891, an amalgamation table, a concentration table, a water pump, two large galvanized-iron water tanks, a three-horsepower Fairbanks Morse engine which operated the well pump, and a twelve-horsepower Western gasoline engine. The latter engine powered the mill machines through a system of shafts, belts and pulleys.

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the National Park Service, U.S. Department of the Interior. The Wall Street Gold Mill Recording Project was cosponsored during the summer of 1991 by the Historic American Buildings Survey/Historic American Engineering Record under the general direction of Dr. Robert J. Kapsch, Chief; Joshua Tree National Monument, David Moore, Superintendent; and Park Historic Preservation, Western Regional Office, N.P.S. Thomas Mulhern, Chief.

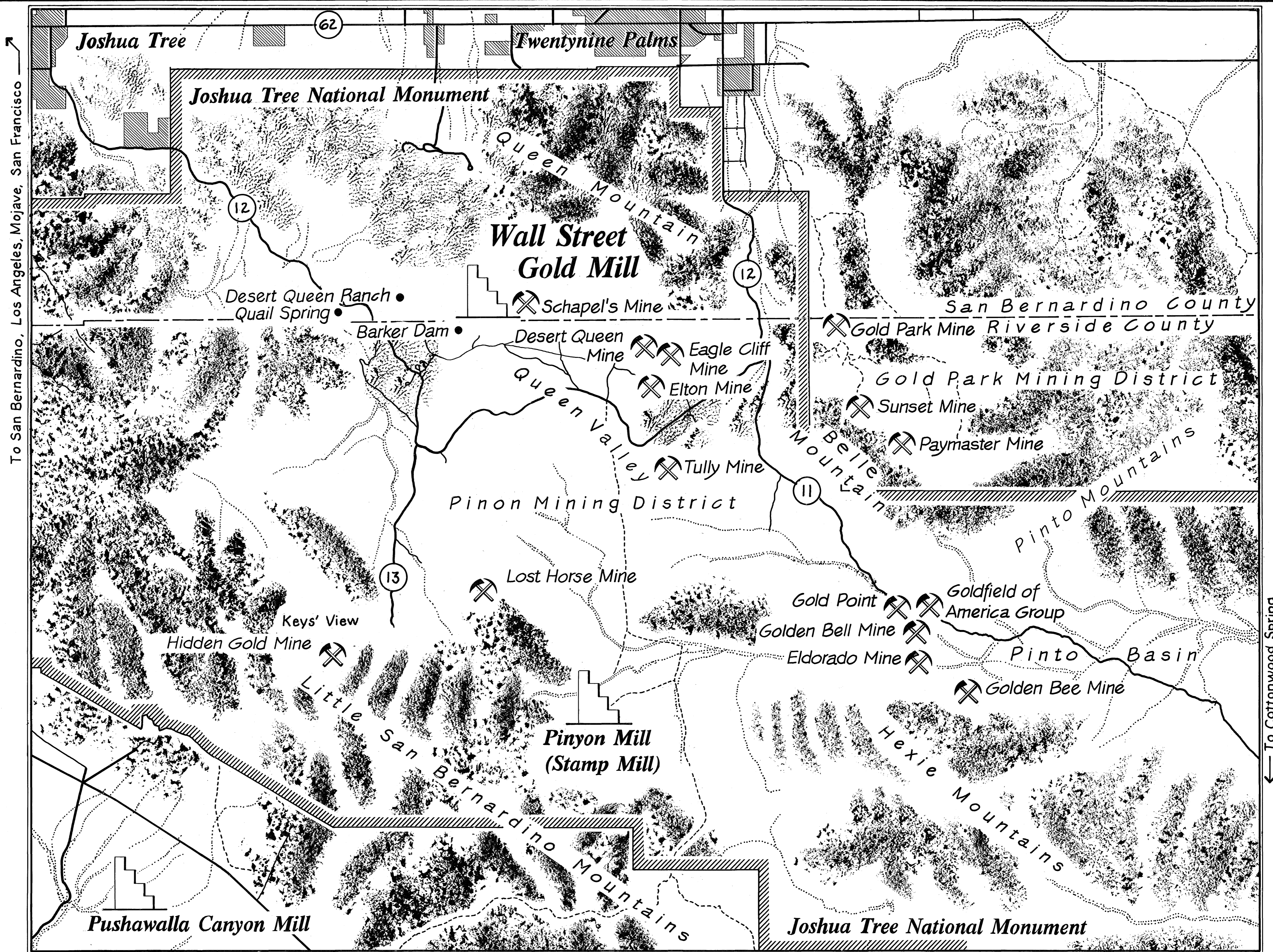
The field work, measured drawings, historical reports, and photographs were prepared under the direction of Eric DeLony, Chief of HAER. The recording team consisted of Ruth Connell, Supervisory Architect (Annapolis, MD.), Elizabeth Wegman-French, (University of Colorado), Historian, and Guek Hoon Ong (Louisiana State University) ICOMOS, Malaysia, and John G. Eberly, (Texas Tech University), Architecture Technicians. Formal photography was done by Brian Grogan, Yosemite, CA. William Truesdell, Chief of Interpretation, served as park liaison. Dr. Donald Hardesty, University of Nevada-Reno, provided archeological observations.

The Wall Street Mill was one point in a network of machinery, ore, water, supplies, and gold. The mill consisted of a conglomeration of equipment which the owner, William F. (Bill) Keys, acquired from several locations. Keys had previously installed the crusher at a mill he built in Pushawalla Canyon for the Hidden Gold Mine. The two-stamp battery was originally made for the mill at the Pinyon Well, and the engine came from the Paymaster Mine. The concentrating table had been used at a short-lived mill just across the wash from the Wall Street Mill.

Once the Wall Street Mill began operation in 1931, it processed ore from numerous mines in the Pinon and Gold Park Mining Districts, including Keys' own Desert Queen Mine. A well at the mill site provided water, a valuable resource in the desert. In dry years, when that well was low, Keys hauled in water from Quail Spring, Barker Dam, and the well at his Desert Queen Ranch. San Bernardino and Los Angeles were major supply points. When the gold was removed from the ore, it either went back to the miner, to a smelter in Mojave or to the U.S. Mint in San Francisco.

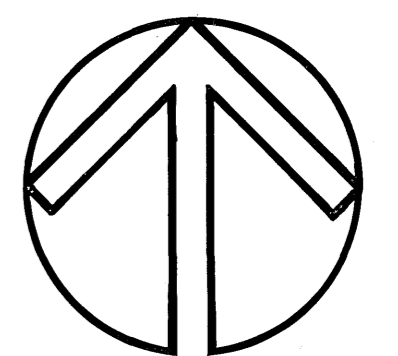
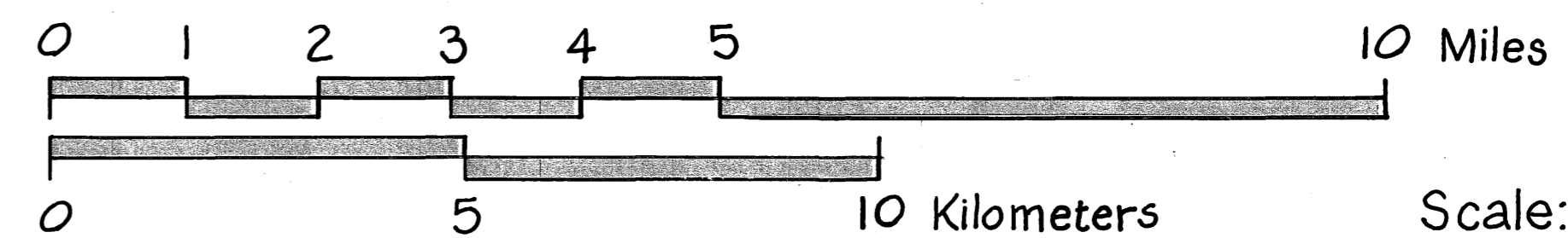
The following mines were known by more than one name: Eagle Cliff as the Black Eagle; Elton as D.C.; Tully as the Crown Prince; Golden Bell as the Margaret and as the Bluebell; Golden Bee as Dickey Boy.

This map is based on USGS topographical maps modified and revised by Trails Illustrated with the cooperation of the National Park Service.
 Trails Illustrated
 P.O. Box 3610
 Evergreen, Colorado 80439-3425



WALL STREET GOLD MILL

TWENTYNINE PALMS CALIFORNIA



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HISTORIC MINING INITIATIVE
 RECORDING PROJECT
 NATIONAL PARK SERVICE
 UNITED STATES DEPARTMENT OF THE INTERIOR

TWENTYNINE PALMS VICINITY

WALL STREET GOLD MILL - 1931
 JOSHUA TREE NATIONAL MONUMENT
 SAN BERNARDINO COUNTY

CALIFORNIA

SHEET

HISTORIC AMERICAN
 ENGINEERING RECORD

CA-110

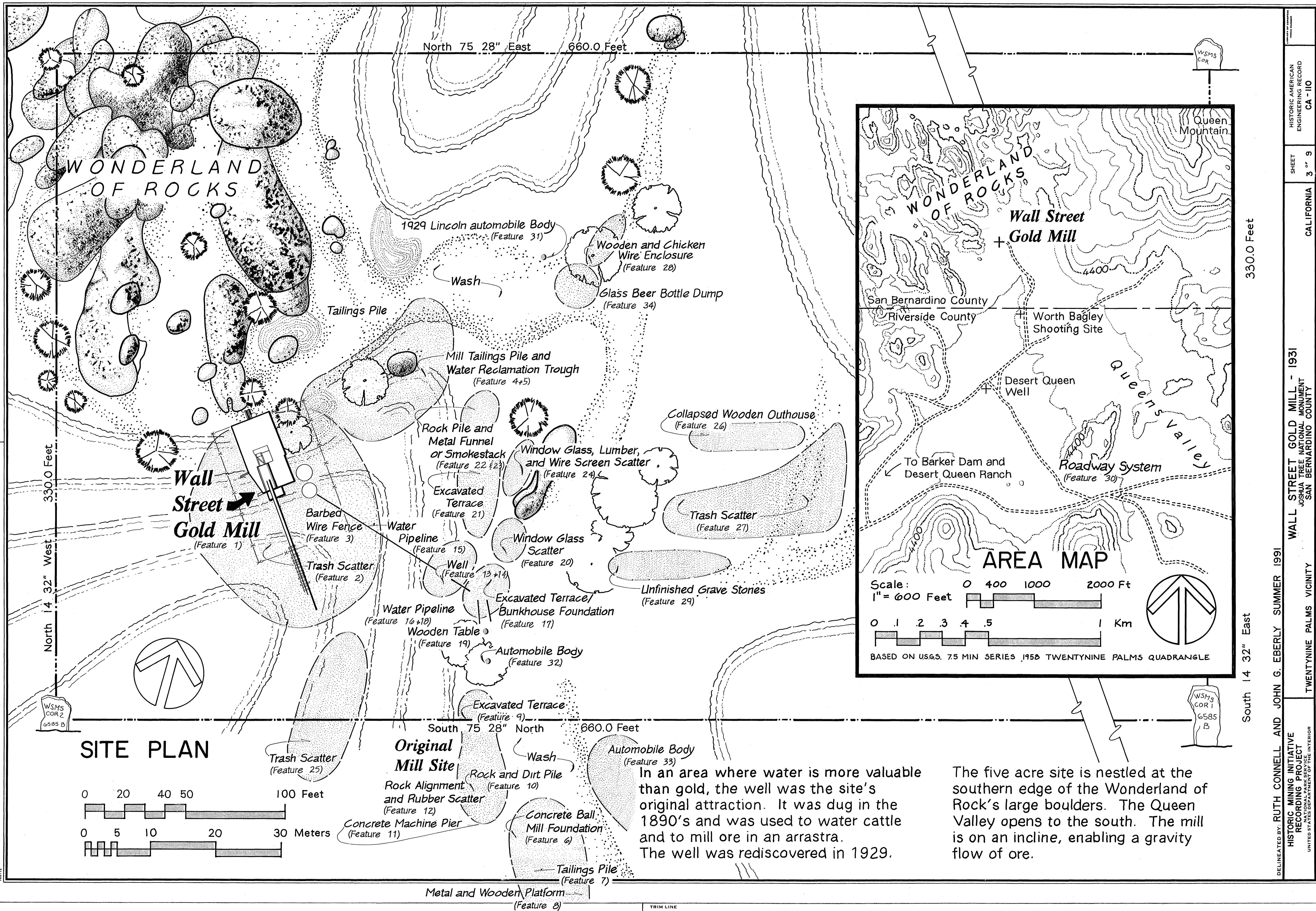
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← To Cottonwood Spring

To San Bernardino, Los Angeles, Mojave, San Francisco

TRIM LINE

TRIM LINE



In an area where water is more valuable than gold, the well was the site's original attraction. It was dug in the 1890's and was used to water cattle and to mill ore in an arrastra. The well was rediscovered in 1929.

The five acre site is nestled at the southern edge of the Wonderland of Rock's large boulders. The Queen Valley opens to the south. The mill is on an incline, enabling a gravity flow of ore.

Hard rock mining generated blocks of ore containing tiny amounts of valuable metals. Ore arrived by truck, was off-loaded into an ore car and hoisted up the incline trestle to the jaw crusher, located on the third level.

At this level, ore arrived by truck, was off-loaded into an ore car and hoisted up the inclined trestle.

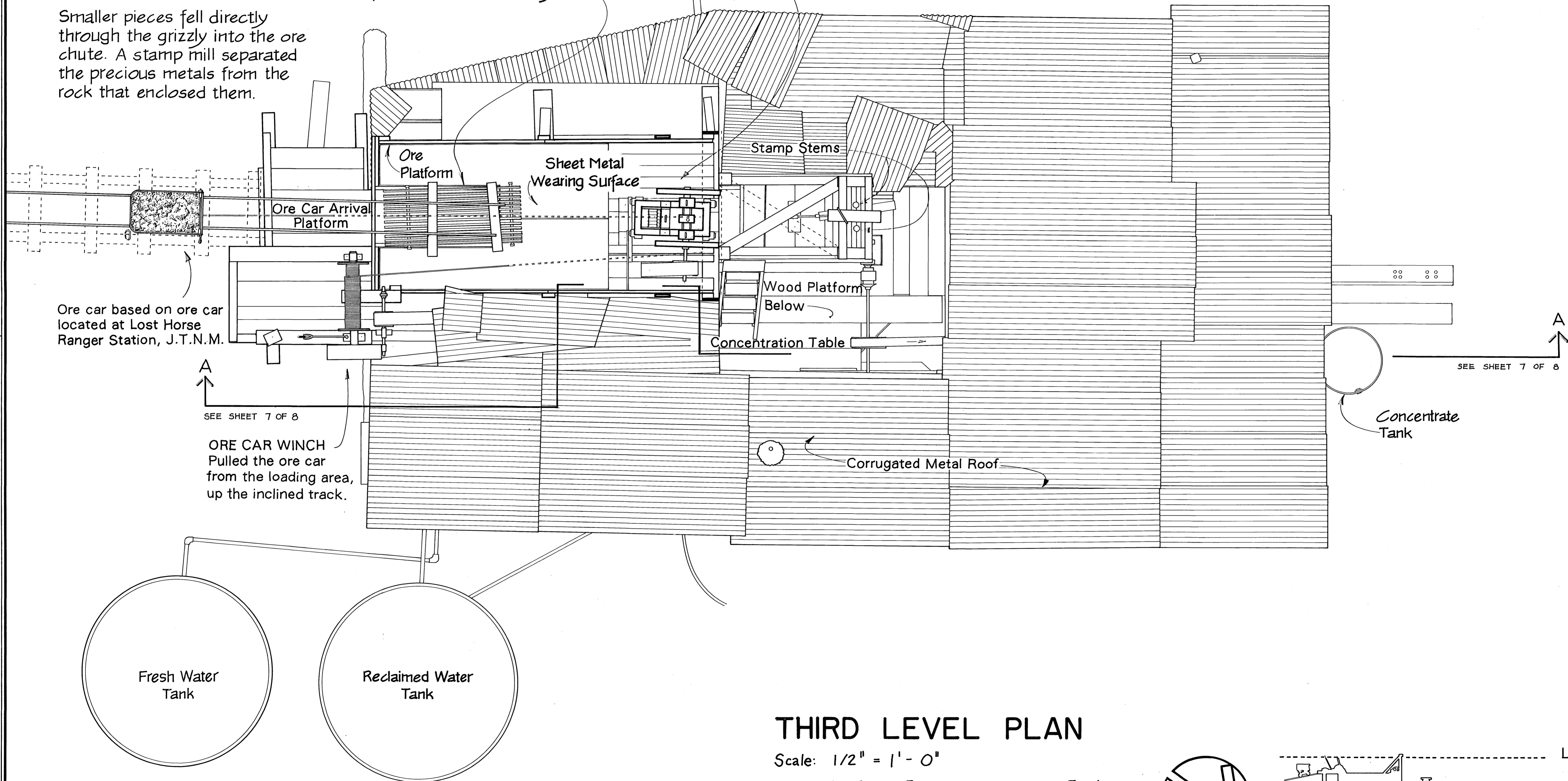
The ore was dumped out of the cars onto the grizzly, and smaller pieces fell into the ore chute.

Smaller pieces fell directly through the grizzly into the ore chute. A stamp mill separated the precious metals from the rock that enclosed them.

Larger pieces were shovelled into the Jaw Crusher, broken into smaller pieces, and fell into the same Ore Chute.

GRIZZLY
A stationary screen of parallel bars for sorting hard rock ore by size.

JAW CRUSHER
Fulton Engine Works, (Los Angeles), this Blake-type crusher broke ore by compressing it between two jaw plates.



Ore car based on ore car located at Lost Horse Ranger Station, J.T.N.M.

SEE SHEET 7 OF 8

ORE CAR WINCH
Pulled the ore car from the loading area, up the inclined track.

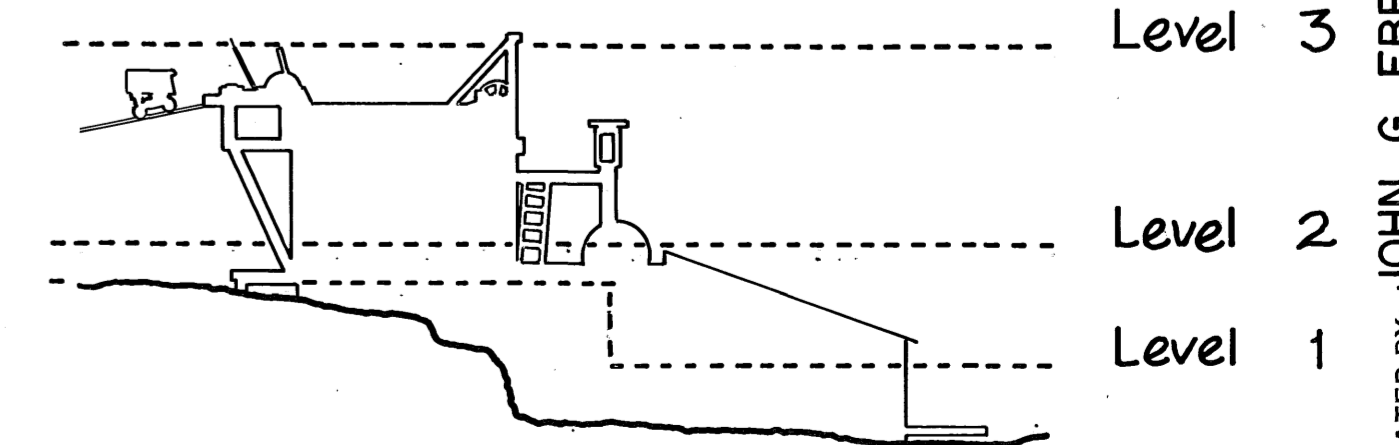
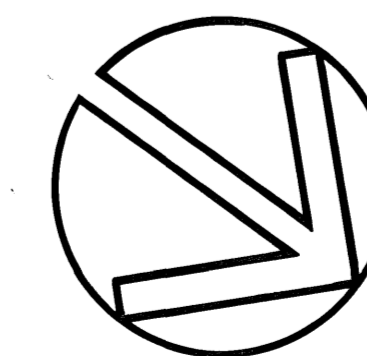
SEE SHEET 7 OF 8

THIRD LEVEL PLAN

Scale: 1/2" = 1'-0"

0 1 2 3 4 5 10 Feet

0 1 2 3 Meters



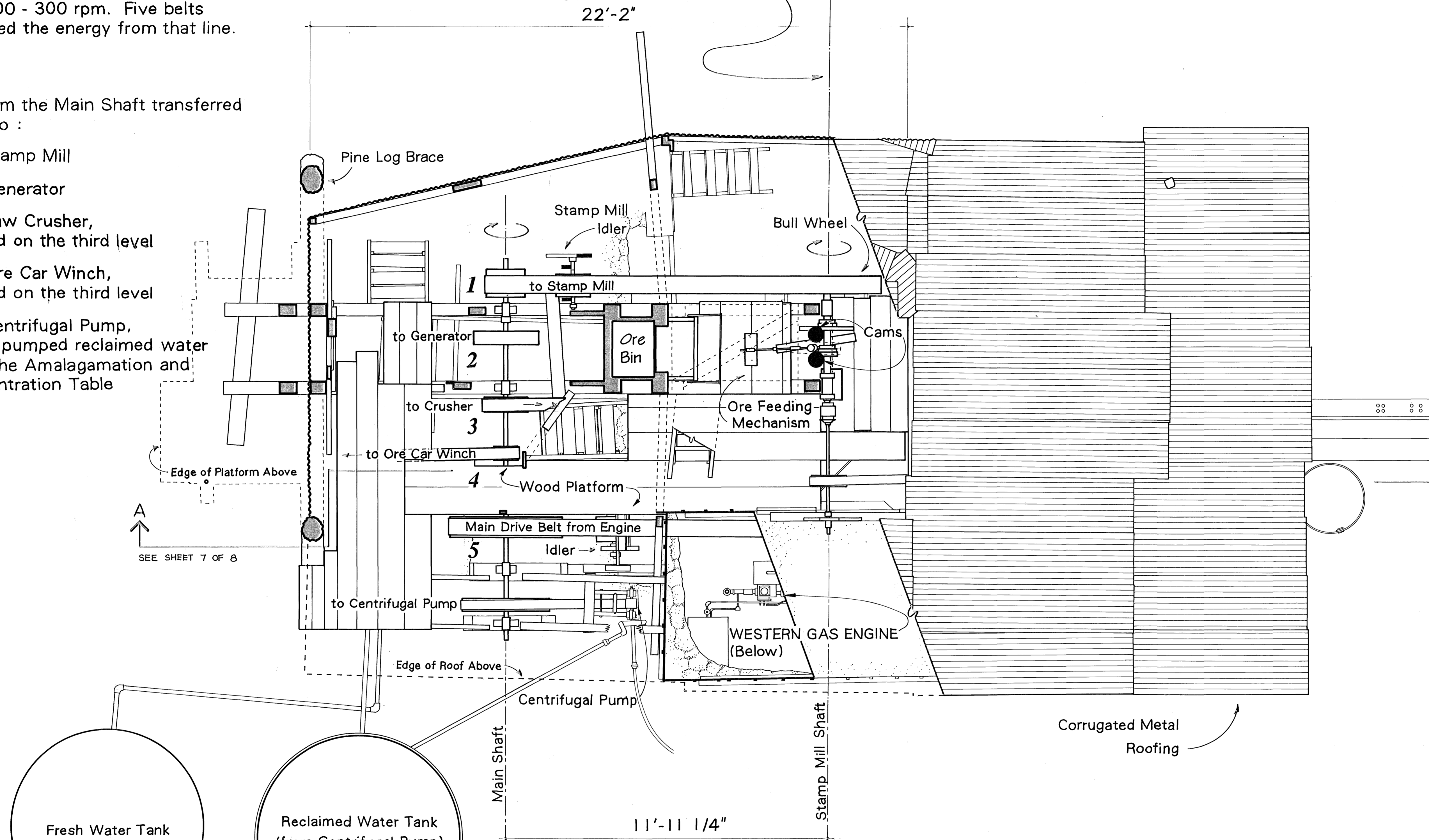
Power was transmitted from the engine to the machinery via belts and pulleys. The main shaft rotated at about 200 - 300 rpm. Five belts distributed the energy from that line.

The belt to the Stamp Mill powered the Bull Wheel, which turned the Cam Shaft, activating the Stamps.

The Cam Shaft was later extended to transfer power to the Concentrating Table.

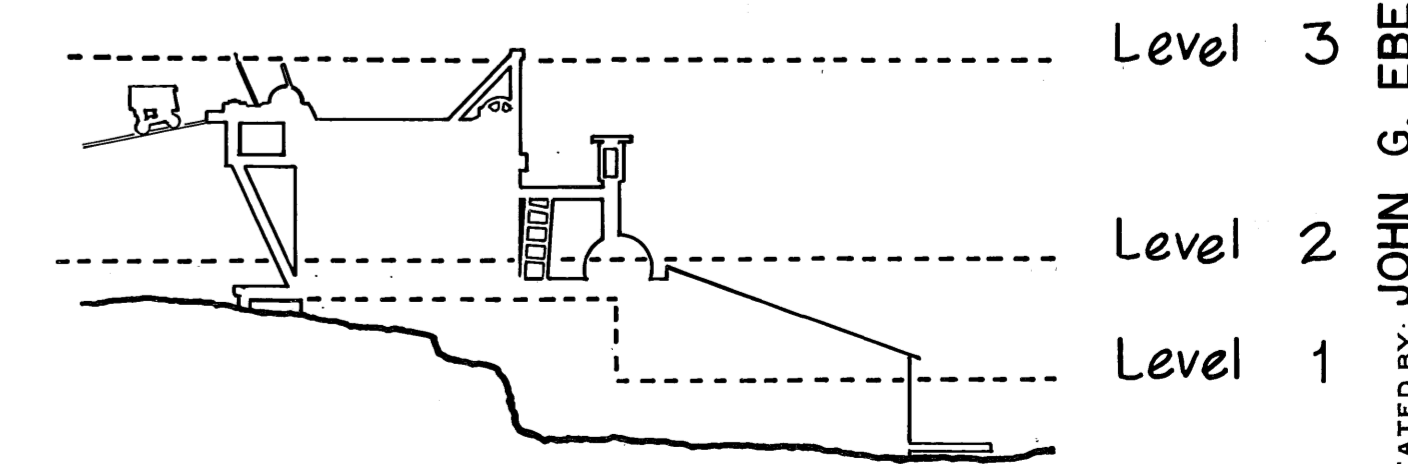
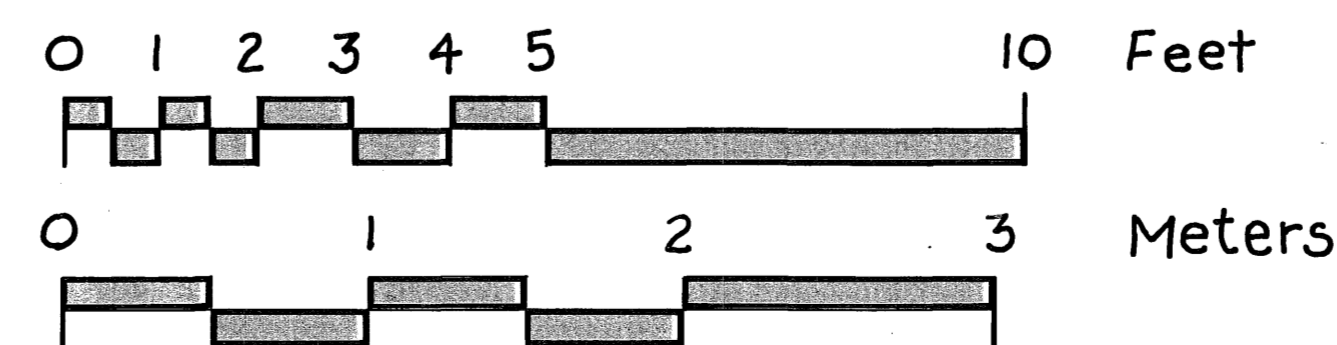
Belts from the Main Shaft transferred to :

1. the Stamp Mill
2. the Generator
3. the Jaw Crusher, located on the third level
4. the Ore Car Winch, located on the third level
5. the Centrifugal Pump, which pumped reclaimed water from the Amalgamation and Concentration Table



SECOND LEVEL PLAN

Scale: 1/2" = 1' - 0"



From Well Pump

Fresh Water Tank

Reclaimed Water Tank
(from Centrifugal Pump)

Main Shaft

Stamp Mill Shaft

Corrugated Metal Roofing

SEE SHEET 7 OF 8

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WALL STREET GOLD MILL - 1931
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO COUNTY

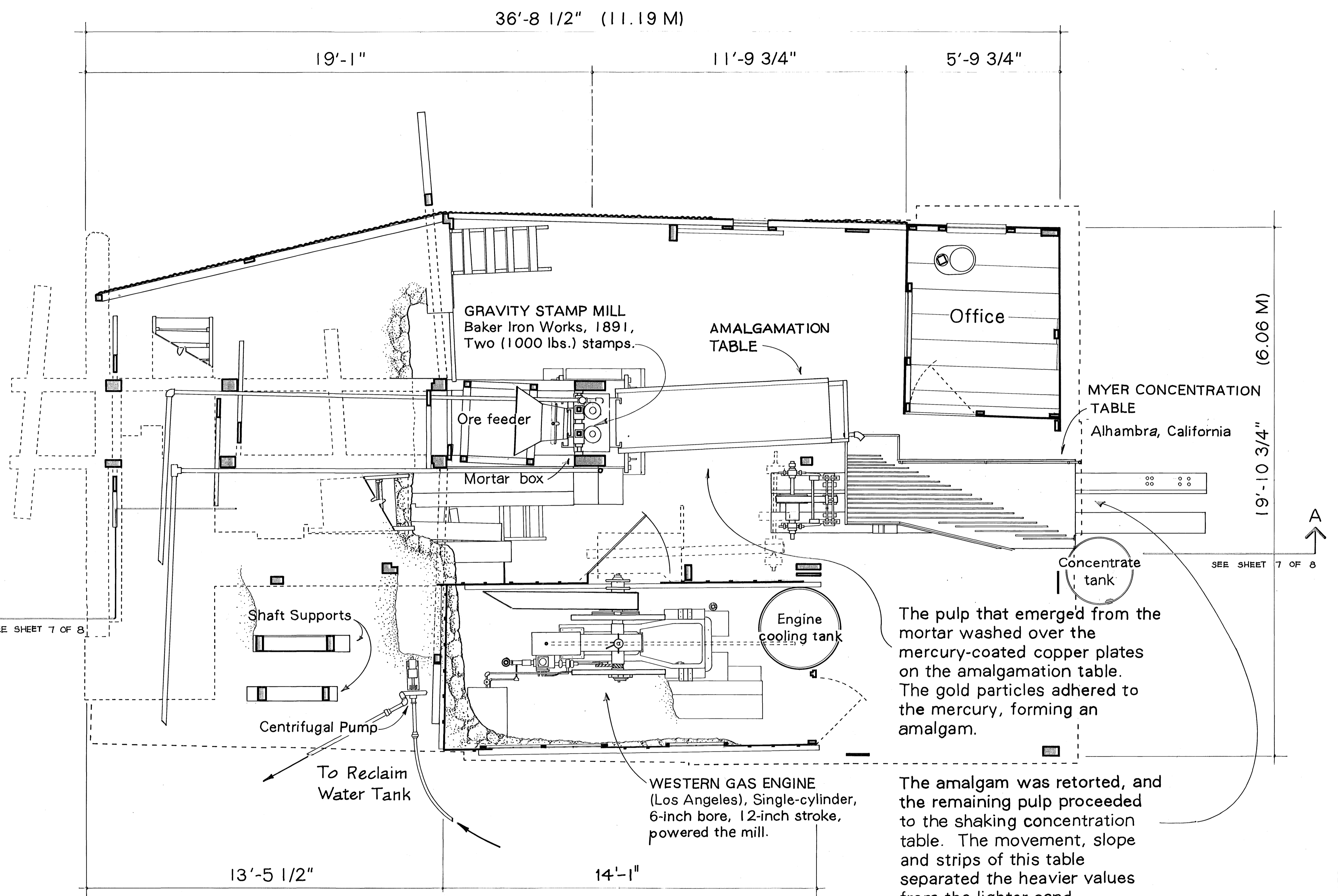
TWENTYNINE PALMS VICINITY

CALIFORNIA

SHEET 5 OF 9

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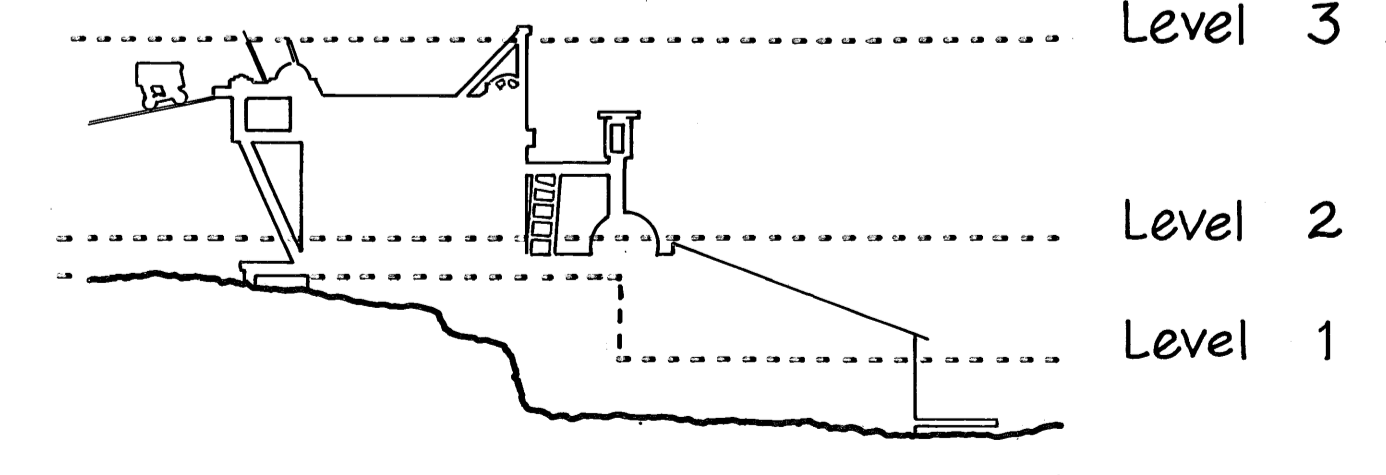
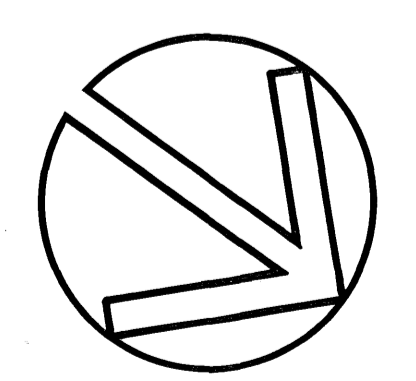
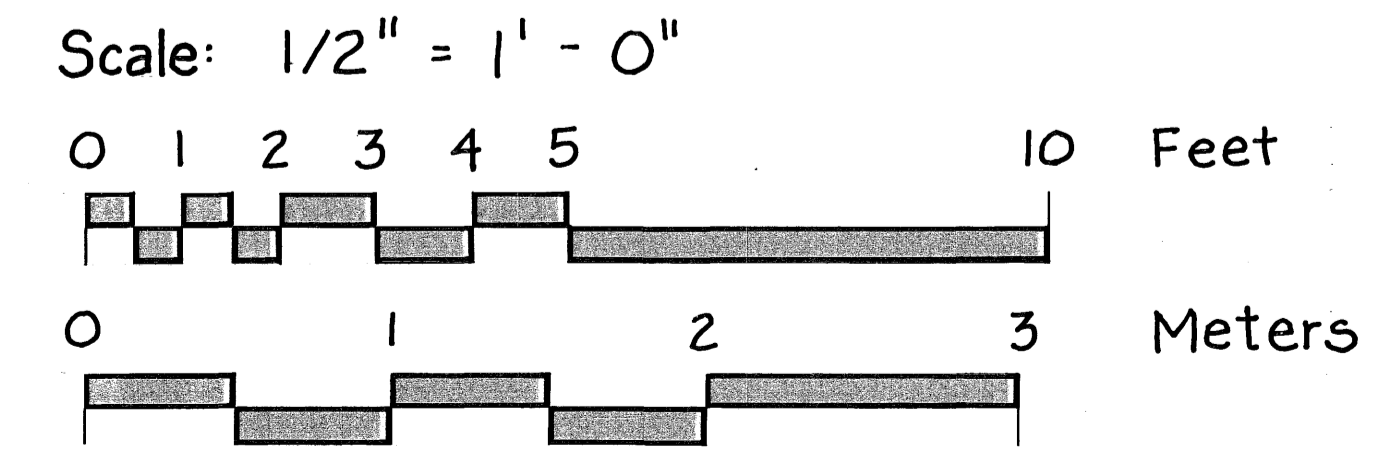
At the level of this plan view, stamps crushed the ore to expose the fine materials. The stamp battery was the center of attention in a mill. It ground ore into a fine sand, using a pounding action like a mortar and pestle. A heavy metal shoe was attached to the bottom of a long vertical stem.

In a gravity mill, such as the Wall Street, the stem and shoe were raised then dropped using a cam and tappet. The shoes were enclosed in a mortar, which was screened on one side and contained water, ore and mercury. The violent action of the plummeting shoe crushed the ore and forced the finer particles through the screen. Some of the gold adhered to the mercury and dropped to the bottom of the mortar, where it was later retrieved.

A
SEE SHEET 7 OF 8

SEE SHEET 7 OF 8

FIRST LEVEL PLAN



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WALL STREET GOLD MILL - 1931
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO COUNTY

TWENTYNINE PALMS VICINITY

SHEET 6 OF 9
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- 1. Miners drove to the mill with their gold ore, which they shoveled into an ore car. A winch pulled the car up an inclined tramway.
- 2. The ore was dumped onto the grizzly. Smaller pieces dropped into the ore chute.

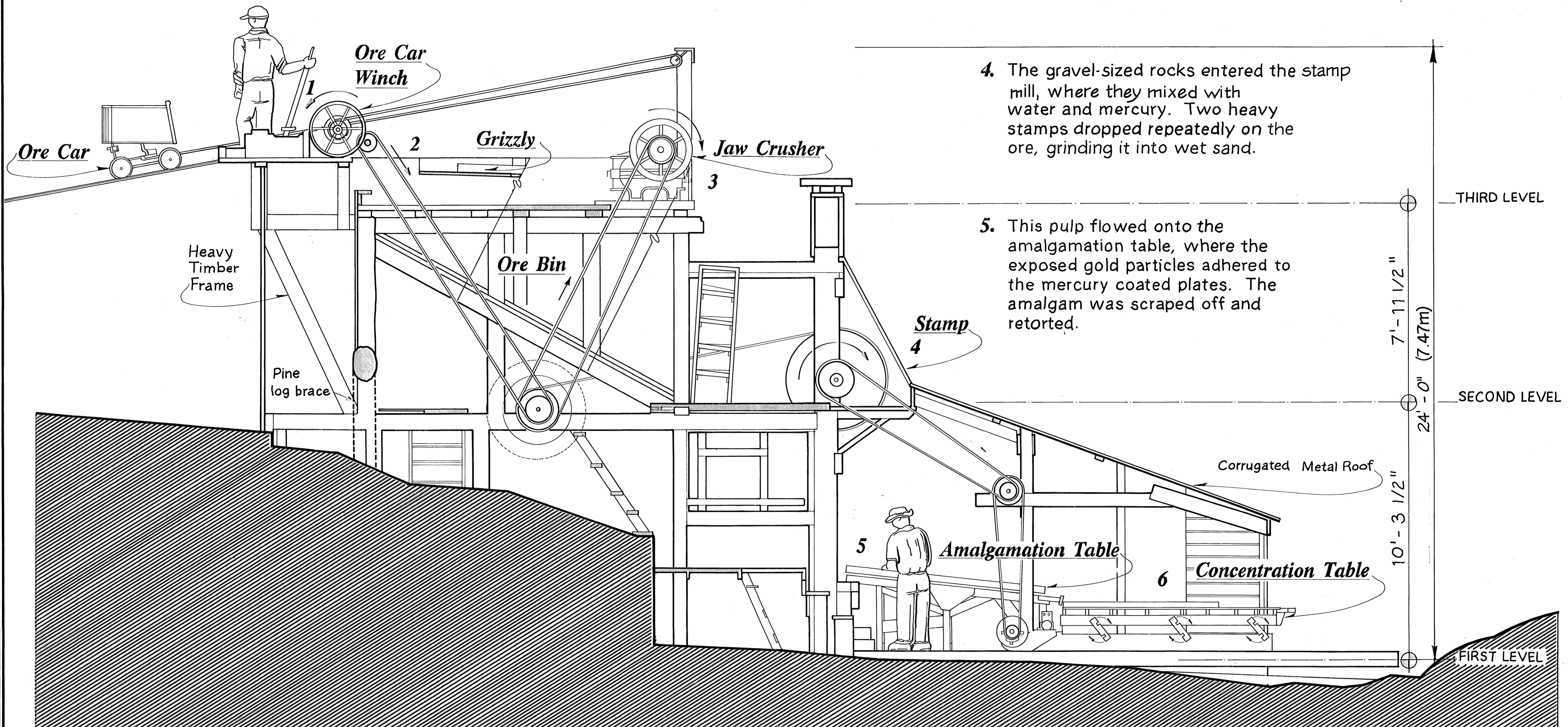
- 3. Larger pieces were broken in the jaw crusher, and then fell into the same ore chute.

- 4. The gravel-sized rocks entered the stamp mill, where they mixed with water and mercury. Two heavy stamps dropped repeatedly on the ore, grinding it into wet sand.

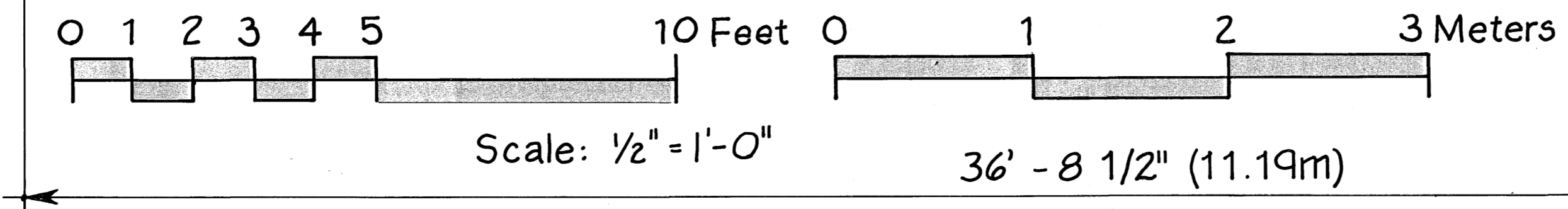
- 5. This pulp flowed onto the amalgamation table, where the exposed gold particles adhered to the mercury coated plates. The amalgam was scraped off and retorted.

- 6. The remaining pulp continued to the concentration table, where any remaining gold was separated by weight.

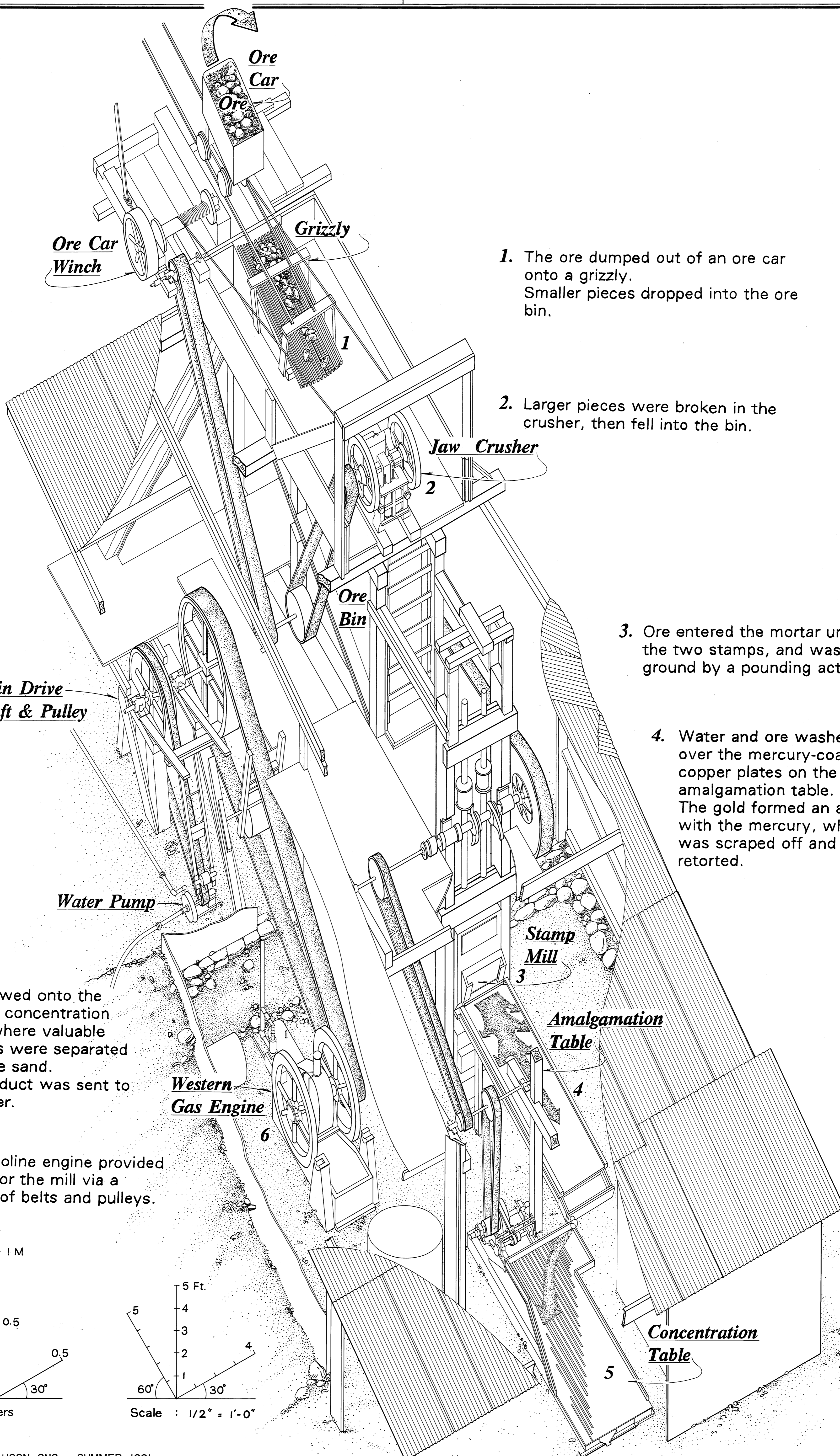
The products were sent to the mint or a smelter.



SECTION A-A



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1. The ore dumped out of an ore car onto a grizzly. Smaller pieces dropped into the ore bin.

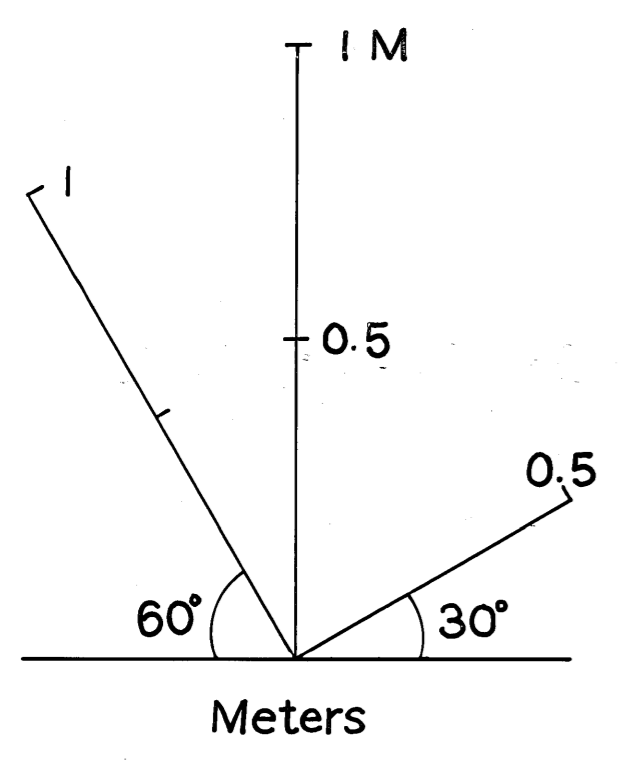
2. Larger pieces were broken in the crusher, then fell into the bin.

3. Ore entered the mortar under the two stamps, and was ground by a pounding action.

4. Water and ore washed over the mercury-coated copper plates on the amalgamation table. The gold formed an alloy with the mercury, which was scraped off and retorted.

5. Pulp flowed onto the shaking concentration table, where valuable minerals were separated from the sand. The product was sent to a smelter.

6. The gasoline engine provided power for the mill via a system of belts and pulleys.



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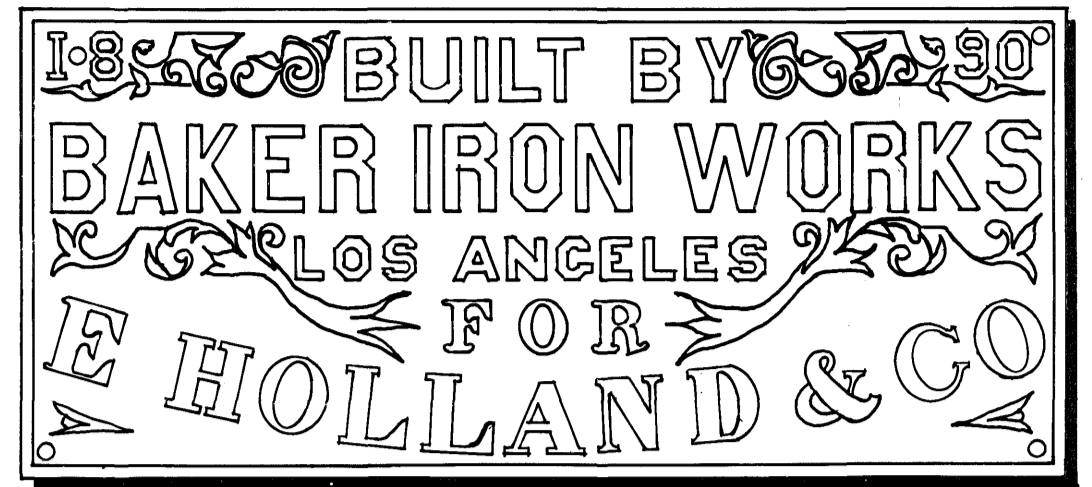
TWENTYNINE PALMS VICINITY

WALL STREET GOLD MILL - 1931
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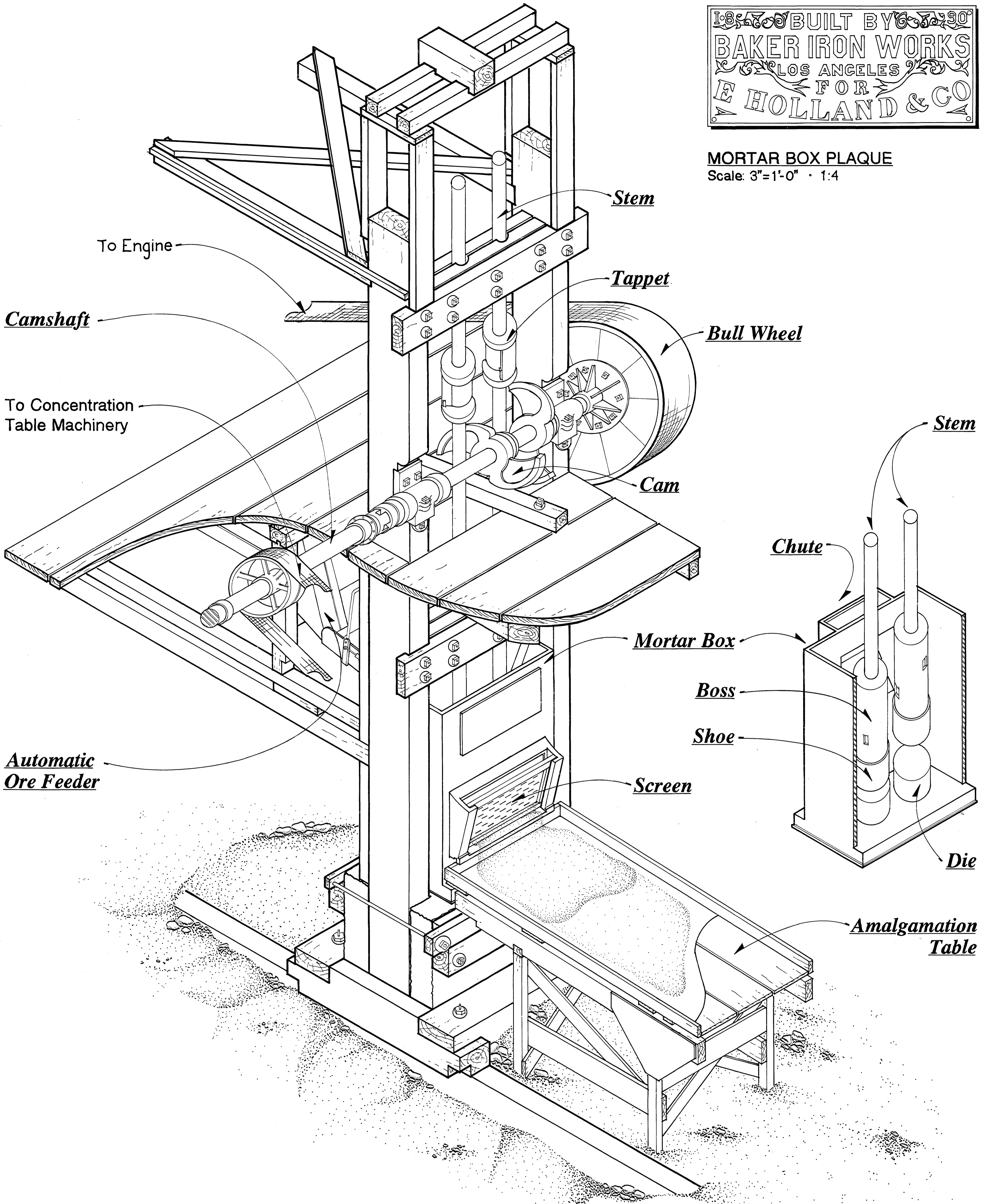
CALIFORNIA

SHEET 8 OF 9

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MORTAR BOX PLAQUE
Scale: 3"=1'-0" · 1:4



**STAMP BATTERY
AXONOMETRIC**

