

PH0505633

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICENATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY

RECEIVED OCT 6 1977

DATE ENTERED

DEC 22 1978

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS  
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS**1 NAME**

HISTORIC

AND/OR COMMON

White's Gulch Arrastra

**2 LOCATION**

STREET &amp; NUMBER

1½ miles S. of county road 2E01 on Forest Road 40N61

NOT FOR PUBLICATION

CITY, TOWN

Sawyers Bar

☒ VICINITY OF

CONGRESSIONAL DISTRICT

1

STATE

California

CODE

06

COUNTY

Siskiyou

CODE

093

**2 CLASSIFICATION**

## CATEGORY

☐ DISTRICT☐ BUILDING(S)☐ STRUCTURE☒ SITE☐ OBJECT

## OWNERSHIP

☒ PUBLIC☐ PRIVATE☐ BOTH

## PUBLIC ACQUISITION

☐ IN PROCESS☐ BEING CONSIDERED

## STATUS

☐ OCCUPIED☒ UNOCCUPIED☐ WORK IN PROGRESS

## ACCESSIBLE

☐ YES: RESTRICTED☒ YES: UNRESTRICTED☐ NO

## PRESENT USE

☐ AGRICULTURE☐ COMMERCIAL☒ EDUCATIONAL☐ ENTERTAINMENT☒ GOVERNMENT☐ INDUSTRIAL☐ MILITARY☐ MUSEUM☐ PARK☐ PRIVATE RESIDENCE☐ RELIGIOUS☒ SCIENTIFIC☐ TRANSPORTATION☒ OTHER Mining**4 AGENCY**

REGIONAL HEADQUARTERS: (If applicable)

USDA-Forest Service, California Region (Region 5)

STREET &amp; NUMBER

630 Sansome Street

CITY, TOWN

San Francisco

VICINITY OF

STATE

California, 94111

**5 LOCATION OF LEGAL DESCRIPTION**

COURTHOUSE,

REGISTRY OF DEEDS, ETC. Public Domain

STREET &amp; NUMBER

CITY, TOWN

STATE

**6 REPRESENTATION IN EXISTING SURVEYS**

TITLE

USFS Site Reconnaissance No. 05-05-54-36

DATE

March 10, 1975

☒ FEDERAL ☐ STATE ☐ COUNTY ☐ LOCALDEPOSITORY FOR  
SURVEY RECORDS

Klamath National Forest Supervisor's Office, 1215 S. Main St.,

CITY, TOWN

Yreka

STATE

California, 96097

## 7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input checked="" type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> RUINS	<input type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED      DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

### DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The White's Gulch arrastra is a circular, stone-flagged pit about 6" deep. It is 12' in diameter with rock walls projecting about 6" above the surface of the ground. There are four granite drag blocks about 1½ cubic feet in volume situated NE, NW, SE, and SW of the center. In the center is located the remains of a post about 15" in diameter. In the bottom, quartz chips from past milling are still evident. The flagstones which line the bottom of the arrastra show the striations cut by the drag-stones as they were dragged around the pit to grind the ore. A Douglas fir tree, cored and dated, is growing out of the floor within the arrastra on the NE side. This tree is approximately 80 years old.

This arrastra's proximity to White's Gulch (creek) would suggest that it was water-powered, and, in fact, of the 28 arrastras listed as operating in Siskiyou County in 1898, 25 are listed as being water-powered (the means of power on the remaining three is not specified [Cooper 1898]). The photographs and sketch enclosed with this nomination form are of arrastras that existed at one time in this county (one of them on White's Gulch) and may provide an idea of the original condition of the subject in question. The photograph from White's Gulch, where only two arrastras are known to have been operating, may be of the arrastra nominated here, but this cannot be said with certainty.

All wooden parts such as water wheel, cross-beams, and cog wheels are missing or have rotted, with the exception of a small portion of the center post. Any structures that may have been associated with the arrastra are not overtly present.

Located about 100' NW of the arrastra is an old cabin site (the cabin has been destroyed). To the west is Forest Road 40N61, and to the east is the creek, which probably served to power the mill. The arrastra is located on C. F. "Lucky" Starr's Lanky Bob mining claim.

The following information is provided to illustrate the principles of construction and method of operation of arrastras in general (one of those described was located on Barkhouse Creek in Siskiyou County): Morrell writes, "The Mexicans know of a very simple contrivance, an arrastra, a circular stone-flagged piece of ground, 10 or 12 feet in diameter, where quartz already broken into small pieces was crushed by two heavy stones dragged round and round by a mule harnessed to a horizontal beam. Its simplicity no doubt derives from a Spanish peasant's method of threshing, as the winnowing of gold-dust does from winnowing of corn..." (Morrell 1941:102) and "Around the Denver area in 1860 the arrastra was more effective than the more complicated stamp mill" (Morrell 1941:58).\*

\*see continuation sheet

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CONTINUATION SHEET

ITEM NUMBER 7 PAGE 1

(cont'd. from No. 7). An article in the Yearbook of the Trinity County Historical Society includes a picture of a double arrastra with an overshot wheel. The caption reads: "The waterwheel had two wooden rims with cross-pieces, and the water spilled from the overhead flume to turn the wheel. The surplus water flowed to a drop into the creek" (Anonymous 1972:20). Another picture of this arrastra has the caption "...the double arrastra (side view) used at Eastman Gulch in the early 1900's. An arrastra is a circular stone floor, surrounded by a low wall and containing a small amount of water. Stone blocks attached by chains to one or more horizontally rotating arms, are dragged over the ore to be ground. The horizontal wooden shaft of this waterwheel had a gear at the end which turned the two vertical shafts of the arrastras" (Anonymous 1972:21).

Shinn reports that, "When the mines were somewhat opened--that is, quarried into by the use of shovels, picks, crowbars, drills, and blasting powder--there was quartz to be worked for its hidden metals. The arrastra was the first method adopted. An arrastra is one of the simplest methods of pulverizing and amalgamating auriferous quartz. It was invented, or re-invented, centuries ago by the Mexicans, and consists of a circular bed from eight to twenty feet across, paved with stones, in which quartz that has been broken into small pieces by a sledge hammer is placed and slowly ground to dust by the dragging of a large 'muller' or slab of granite over the quartz-covered pavement. In the best form of the arrastra the paving is very carefully done with hewn rock, granite, or greenstone; a boundary wall of granite a foot or two in height confines the quartz, and a post rises in the center from a stone or iron socket. Two arms project from the post, fastened in a framework so as to revolve easily, and one of them projects...over the wall of the arrastra [so] that a mule can be harnessed there. Each muller weighs five hundred to a thousand pounds, and is suspended so that the forward end is an inch above the pavement while the rear end drags. The rule for breaking the quartz is to make it like good road material--no piece larger than an inch across. About four hundred pounds is then put into the arrastra ten or twelve feet in diameter. If the quartz is not very hard it can be pulverized in four or five hours. The ore is kept wet all the time, and the grinding is continued until the mass is like cream. Quicksilver is then put in at the rate of an ounce or more to each ounce of gold that is supposed to be in the quartz, and the grinding goes on for an hour or two longer until the amalgamation is considered complete. Quite a stream of water is then allowed to run through a sluice gate, and the grinding continues half an hour, to let the amalgam settle to the bottom. Grinding then stops. Another gate is opened, and the stream of water soon washes out the fine gray mud to which the rock has been reduced, leaving the metal on the bed of the arrastra" (Shinn 1901:80-81).

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The earliest written account presented here comes from Hutching's California Magazine which writes, "One of the first mills used, as well as one of the most useful and most important, is the Mexican Rastra (sic). The Mexican method of constructing these is to lay a circular track of stone tolerably level with a low wall around the outside of the track; and in the center a post made of a tree cut off at the required height, and generally just above a crotch or arm; another small tree is then cut in the shape required, for making a horizontal shaft; to this is attached one or more large stones; and these being drawn around by donkey or mule power, grind the quartz to powder. Of course, as gold is the heaviest it naturally seeks the lowest places, and as quicksilver is always put in with the quartz the gold becomes amalgamated with it. The Mexican rastra has been improved some little in its construction and adaptation to our wants; and in many cases mule-power has been superseded by steam.

When the rock is properly prepared, a batch of about five hundred pounds is generally emptied into one about ten feet in diameter; but the quantity is always regulated by the size of the machine. It is ground very fine by means of the drag-stones attached to arms fixed in the perpendicular shaft, and which are generally given about eight revolutions per minute. About three quarters of an hour before the whole is thoroughly ground, a sufficient quantity of quicksilver is added; but the amount is regulated by the richness of the quartz.

About ten minutes before the grinding is finished, about sixteen buckets of water are poured into the rastra and the same motion continued, the whole appearing like muddy water. This is then baled out, or run off quickly. Five hundred pounds more of the quartz are then added, and the process repeated, adding the same portion of quicksilver to every batch.

This is kept on for one, two, three, or even four weeks. The amalgam is then taken out of the crevices in the bottom of the rastra, and carefully panned out, and as carefully retorted. After this, most business men melt the gold into bars or ingots.

Before commencing to grind again, the crevices between the stones covering the floor of the rastra, about one and a half inches wide, are tightly packed and filled with clay, level with the stone.

In El Dorado County, rastras sixteen feet in diameter are used to great advantage, as more than double the amount of quartz is ground by them than by the smaller ones...

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It should also be remembered that not less than two-fifths more quartz is ground in the same rastra when worked by steam or water-powered than when worked by animals, inasmuch as the speed and regularity is increased" (Anonymous 1857:152-153).

An excellent description and drawing of the double arrastra that was located at the head of Barkhouse Creek in Siskiyou County is printed in the 1896 Report of the State Mineralogist, California State Mining Bureau (the drawing is attached). It states, "The double arrastra used to crush ore from this mine is a fine piece of work. It reduces 5 tons of ore per twenty-four hours, and cost, complete and ready to run, about \$700. It requires two men, one on each shift, and is driven by a wooden hurdy wheel, 18' in diameter, using 30 miner's inches of water, supplied through a 7" pipe with a 2" nozzle, under 100' pressure. The two grinding pits are situated one on each side of the water-wheel, so that its shaft L, transmits the power by pin-wheels (at right angles to each other) to the arrastra shafts HH. The horizontal pin-wheels, II, have 51 perpendicular hardwood pins, 2" in diameter, 4" in length, and set 4" apart from center to center. The pin-wheels, KK are 3' in diameter, and are built on the 2' wheel-shaft. Each has 13 hardwood pins, 2" in diameter, 4" in length, driven in horizontally, 4" apart from center to center. Both wheels are made of sections of 2" plank, nailed together and bound with two bands of wagon tire. The ends of each shaft terminate in 3" iron spindles. Each pit is built as follows: Heart-wood center-post, A, 8' long and 18" in diameter, is set 4½' in the ground; around this a double door, B, 16' square and made of 2" plank, is laid as a foundation. Next, the circular rim, C, 12' diameter, is built of 2" plank with broken joints, until the top is 38" above the floor. In the pit thus formed, moist clay, D, is rammed, a thin layer at a time, until it is 10" thick. Next, a bed of dry, clean sand for the pavement is placed upon the clay. The pavement is made of hard, fine-grained rocks (trap), having at least one nearly flat surface, which are placed as close together as possible and the interstices filled with spawls tightly wedged. The annular pavement, E, should be as smooth as possible, and with a depression 4" deep. The drags or mullers, FF, are made of the same rock as the pavement, and weigh from 800 to 1,000 lbs. each. By means of eye-bolts, let into the rock, they are hung to the drag arms, GG, by chains. The forward edge of the drag is raised about 1" to allow it to pass over the material, and the eyebolts are so placed that one corner of the drag is somewhat in advance. As it plows through the pulp, a portion is pushed to one side, directly in the path of the next following drag. The relative position and size of the drags must be such that every part of the pavement is passed over in each revolution. The proper speed is 12 revolutions per minute. The modus operandi is as follows: Each charge, consisting of 1¼ tons of ore, broken to the size of a walnut, is gradually shoveled into the pit, water enough being added to make a rather thick pulp when the quartz is pulverized. After 8 hours' grinding (more or less, according to the hardness of the ore),

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2 ozs. of quicksilver for every 20 dollars gold in the ore is added gradually. After 2 hours more, the speed is reduced to 4 revolutions per minute, to allow the amalgam to settle, water being added to thin the pulp. After another 2 hours, or when a pan scraped along the bottom does not show any amalgam or quicksilver, the pulp is allowed to pass off slowly into the sluices. The outlet for this purpose is made as follows: a slot 16" high and 6" wide is cut through the rim, extending from a point 4" below the top of the rim to the pavement. This opening is closed by pieces of board 2" high and sliding in guides. By removing these pieces, one by one, 2" in depth of pulp can be run off each time. The sluices into which the pulp flows are from 12' to 24' long, and the bottom covered with amalgamated plates, riffles, and burlap. When the arrastra is emptied to within 3" or 4" of the bottom, the outlet is closed, the speed increased, and a new charge of ore put in. About once a month the paving is taken up and the amalgam collected from the sand below, cleaned, and retorted." (Anonymous 1896:394-395)

## 8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input checked="" type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input checked="" type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
<input type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input checked="" type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input type="checkbox"/> INVENTION		

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SPECIFIC DATES	minimum date of last use: 80 years ago	BUILDER/ARCHITECT	Unknown
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### STATEMENT OF SIGNIFICANCE

The settlement and early development of Siskiyou County was brought about by gold miners who began to work the placer deposits in this area in the 1850's. In fact, the first gold discovered in the county was in June, 1850, when a party of men crossed the ridge from the North Fork of Trinity River and dropped down into the South Fork of the Salmon River, which they followed down to the forks and there struck gold (Wells 1881). From there they spread up the North Fork, staking and working claims along the way, and eventually began mining all along the Klamath River and its tributaries.

These placers were worked for several years, and in 1860, gold-bearing quartz was discovered on the lower end of White's Gulch on the North Fork of the Salmon River. A claim was located here and a mill, purchased in San Francisco, was erected on the site. This was the first quartz gold discovery and the first quartz mill on the Salmon River (Daggett, Hallie 1957).

The arrastra on White's Gulch being nominated here is located on one of the Lanky Bob Quartz Mine claims, which are reported to have produced \$50,000 in gold between 1860 and 1904 (Daggett, John 1957). The exact date of construction of this arrastra is not known, but two water-powered arrastras are listed in operation on White's Gulch in the 1898 Siskiyou County Register of Mines and Minerals (Cooper 1898). The location given for one of these arrastras is T40N R11W Sec. 36, which corresponds with that of the arrastra being nominated. An increment core was taken from the Douglas fir growing out of the floor of the arrastra, which dated the tree around 80 years of age. This would be the minimum date of last use.

Twelve arrastras are reported to have been in operation in Siskiyou County in 1896 (Anonymous 1896). By 1898, an additional sixteen arrastras were in operation (see Cooper, [1898] for names and locations of the mines). Of the fifty-three quartz mills listed by Cooper (1898) in the county at that time, twenty-eight were arrastras and twenty-five were stamp mills. That arrastras were more prevalent than stamp mills is not surprising, since they were less expensive and easier to erect, but the fact that they were the predominate means of ore dressing at that time demonstrates the significant role arrastras played in the early mining history of this county. The significance of the \*

## 9 MAJOR BIBLIOGRAPHICAL REFERENCES

Anonymous

1857 Quartz Mining in California. Hutching's California Magazine, Vol. II, No. 4, pp. 146-154

(see continuation sheet)

## 10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY one acre (less than one acre) - see 12-15 phone report  
UTM REFERENCES

A 

1	0
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4	9	3	7	0	0
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4	5	6	9	8	0	0
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ZONE EASTING NORTHING

B 

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ZONE EASTING NORTHING

C 

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D 

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VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

## 11 FORM PREPARED BY

NAME / TITLE

P. Allan Bier/Forester and Gary Stumpf/Archaeologist

3 October, 1976

ORGANIZATION

USDA Forest Service

DATE

Sawyers Bar 4600

STREET & NUMBER

N/A

TELEPHONE

CITY OR TOWN

Sawyers Bar

STATE

California

## 12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES ☒

NO ☐

NONE ☐

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is National ☐ State ☒ Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE

Acting Director of Recreation Mgmt.

DATE

10/3/77

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST:

KEEPER OF THE NATIONAL REGISTER

DATE

12/22/78

DATE

12/21/78



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(cont'd. from No. 8)...particular arrastra being nominated is further heightened by the fact that it is the only known arrastra remaining in this county and, with the exception of its wooden components, is complete, unaltered, and in its original setting.

With regard to the areas of significance listed on this form, the White's Gulch arrastra has research potential for historical archaeological studies of this method of processing ore. It is also significant in its relationship to the mining industry in general (the use of arrastras for grinding ores is widespread--Thrush [1968:53] reports their use as far away as Central America) and to the development of the mining industry of Siskiyou County in particular. Furthermore, this arrastra has significance as an educational tool, either left in its present condition or restored. It is easily accessible (only 50' from Forest Road 40N61, 4.3 miles from Sawyers Bar) and would be a good subject for field trips by schoolchildren, local residents, and tourists.

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Anonymous

- 1896 Siskiyou County in Thirteenth Report of the State Mineralogist, J. J. Crawford, ed., pp. 386-435. California State Mining Bureau, Sacramento.

Anonymous

- 1972 100 Years of Deadwood in Trinity, 1972, Official Yearbook, Trinity County Historical Society, Weaverville, California.

Cooper, A. S.

- 1898 Register of Mines and Minerals, County of Siskiyou. California State Mining Bureau, Sacramento.

Daggett, Hallie

- 1957 Discovery of Quartz Mines in The Siskiyou Pioneer, Walter Pollock, ed., Vol. 2, No. 10, p. 3. Siskiyou County Historical Society, Yreka, California.

Daggett, John

- 1957 Yield of Salmon River Quartz Mines in The Siskiyou Pioneer, Walter Pollock, ed., Vol. 2, No. 10, p. 4. Siskiyou County Historical Society, Yreka, California.

Morrell, William Parker

- 1941 The Gold Rushes. The MacMillan Company, New York.

Shinn, Charles Howard

- 1901 The Story of the Mine. D. Appleton and Company, New York.

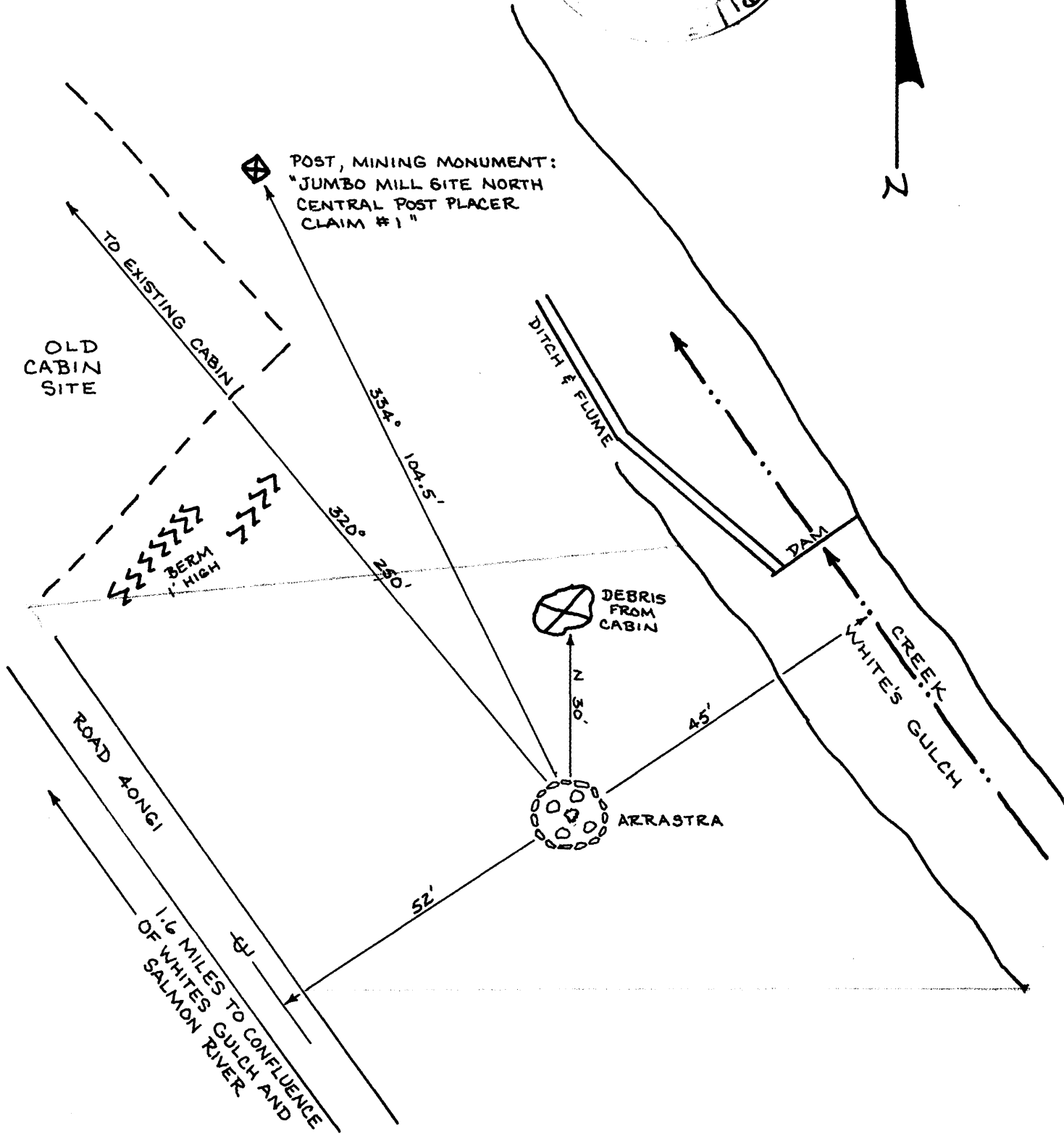
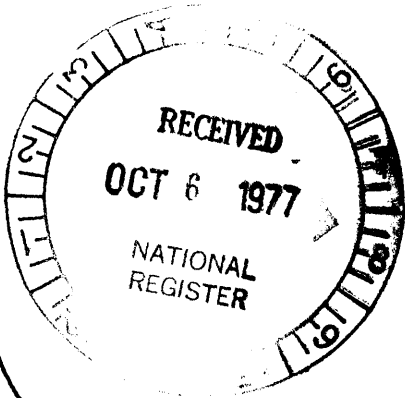
Thrush, Paul W.

- 1968 A Dictionary of Mining, Mineral, and Related Terms. United States Department of Interior, Bureau of Mines.

Wells, Harry L.

- 1881 History of Siskiyou County, California. D. J. Stewart and Co., Oakland.

WHITE'S GULCH ARRASTRA  
SAWYERS BAR, CALIFORNIA  
UTM REFERENCE:  
10/493,700/4,569,800  
SKETCH MAP  
NOT TO SCALE



# DOUBLE ARRASTRA

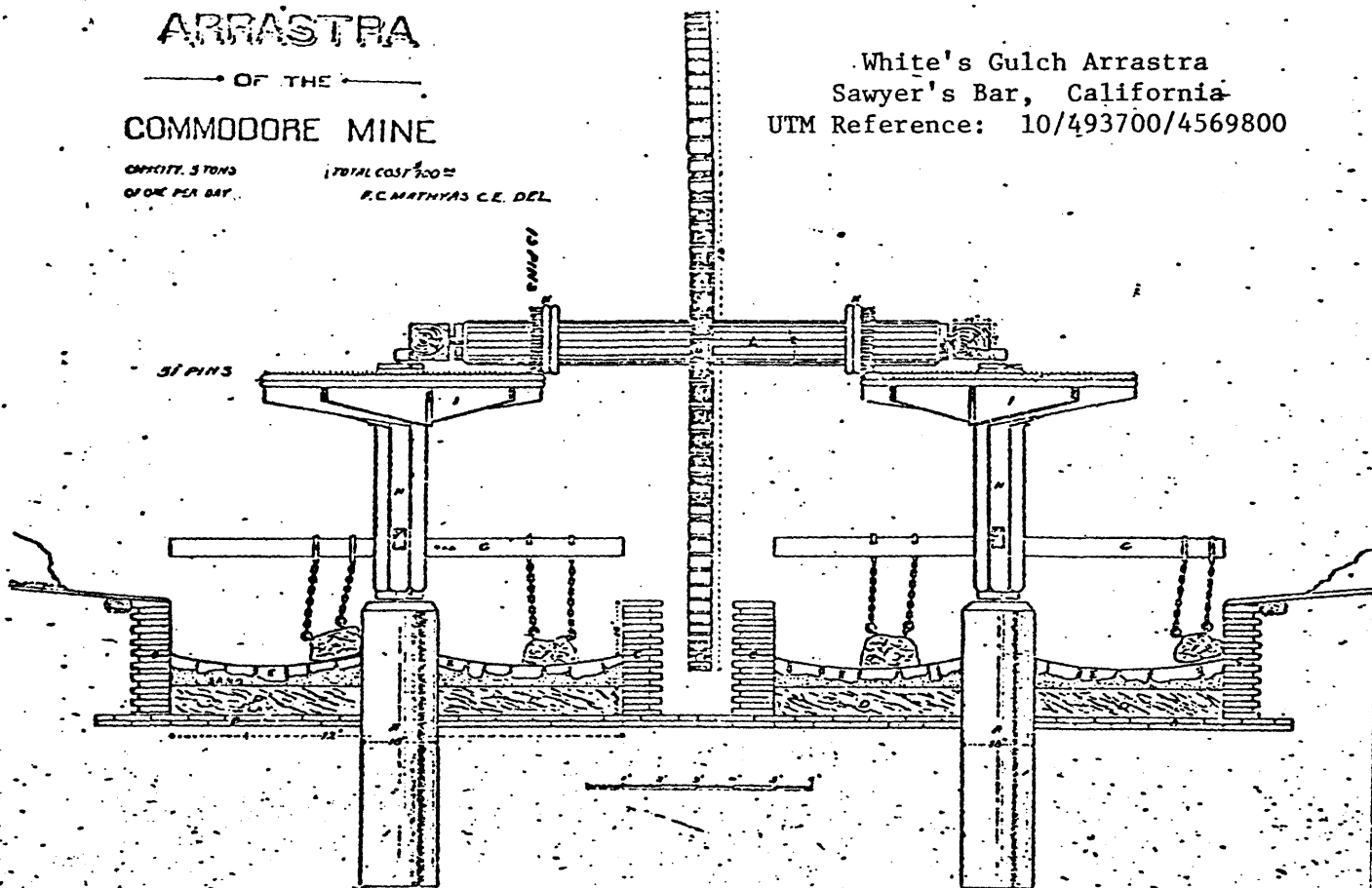
OF THE  
COMMODORE MINE

CAPACITY 5 TONS  
OF ORE PER DAY

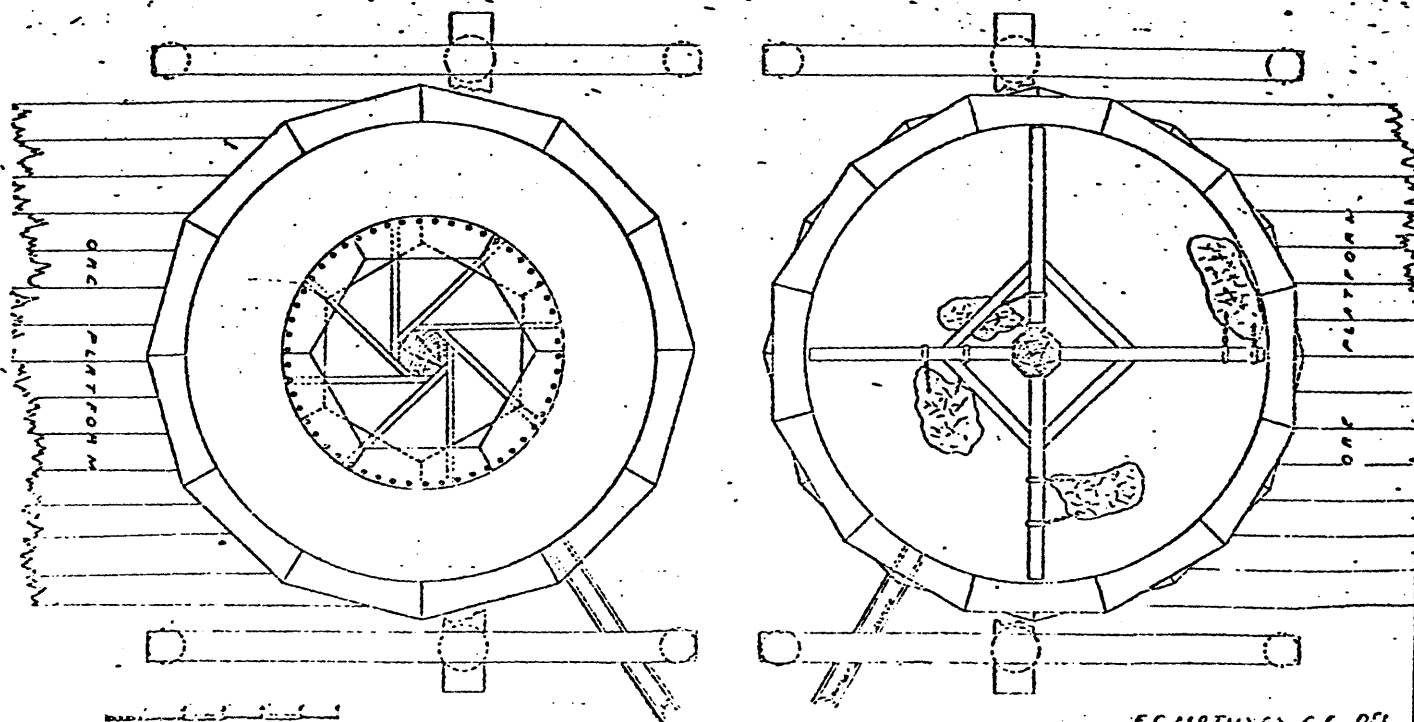
TOTAL COST \$2000

F.C. MATTHEWS C.E. DEL.

White's Gulch Arrastra  
Sawyer's Bar, California  
UTM Reference: 10/493700/4569800



PLAN



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