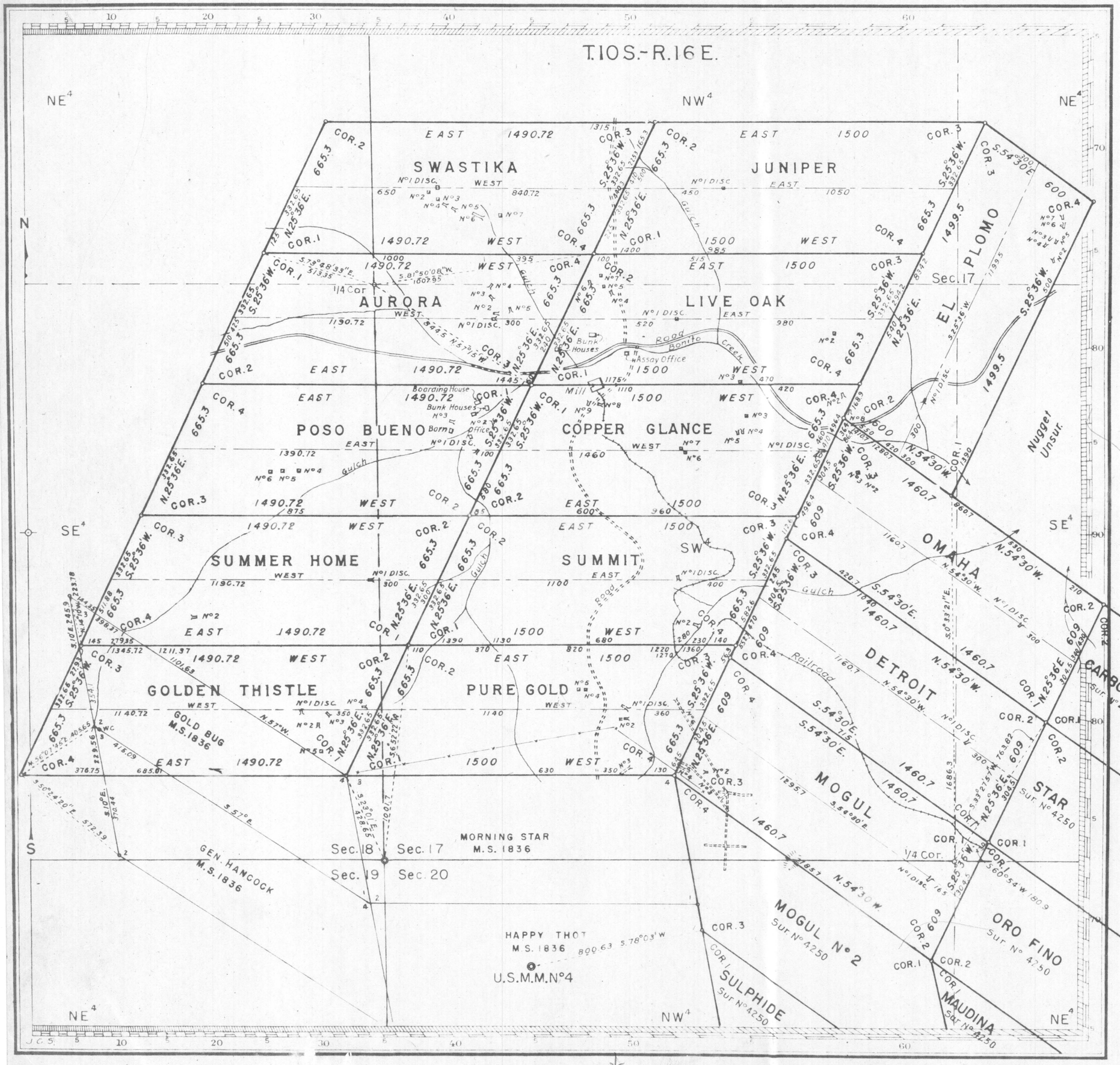
Plan of Surface and Mine Workings,
Ore found on Surface, Cross hatched in solid lines
" " underground " " " broken lines
Scale: 1" = 10'
JUNIPER TREE
TOOL HOUSE
ROAD
ROAD
ORE BIN
CHUTE
BLACKSMITH SHOP
ROAD
EL. 88.0 COMPRESSOR HOUSE
FLOW
Tunnel and Trench
EL. 162.7
EL. 165.4
EL. 160.7
EL. 154.2
EL. 149.2
EL. 137.0
EL. 167.0
EL. 161.4
MARCH 1944.
EL. 164.2
EL. 148.0
EL. 139.3
Fault breccia
EL. 136.4
EL. 167.8
EL. 166.7
EL. 141.0
GLORY HOLE
EL. 139.1
RAISE TO SURFACE EL. 178.8
EL. 139.0
Adit level Elev. 88'
EL. 142.0
EL. 156.2
RAISE
N 86° 36' W - 58.58
RAISE
RAISE
EL. 163.0
1320.55
LINE STAKE - EL. 165.9
263.24
3/4" OPEN PIPE ON LINE - EL. 133.8
214.87
WEST
PURE GOLD
MORNING STAR
SIDE LINE
EL. 163.9
EL. 155.6
EL. 115.5
EL. 130.9
RAISE
EL. 140.5
WINZE
INTERMEDIATE
ROAD
Approximate outcrop of breccia on hanging wall of Mogul fault
OPEN CUT
ROAD
GULCH
ORE BIN
Drill Hole
Limestone, quartz etc.
N 72° 43' W 196.76
PURE GOLD
MOGUL
4 3
EL - 100
4 4
N 25° 36' E
S 54° 30' W
S 10° W
MORNING STAR
MOGUL NO. 2.
This lower pencil outline represents the revised & corrected survey
SEPT. 20-21, 1944.
MAUDINA TUNGSTEN MINE
(CAMPO BONITO MINES INC.)
OLD HAT MINING DISTRICT.
PINAL COUNTY, ARIZ.
from survey
BY Mineral Surveyor G.L.O.
REGISTERED CIVIL ENGINEER
T. N. STEVENS
ARIZONA, U.S.A.



Mineral Survey No. 4250 (3 SHEETS)

ARIZONA Land District

PLAT

OF THE CLAIM OF

CAMPO BONITO MINES. INC., KNOWN AS THE AURORA, CARBONATE, COLONEL BILL, COPPER GLANCE, DETROIT, DON PEDRO, EL PLOMO, FRESNAL, GOLDEN THISTLE, GOLD KING, GOLD MILL, JUNIPER, LEYNER, LIVE OAK, MAUDINA, MOGUL, MOGUL NO. 2, OMAHA, ORO FINO, PAGA ORA, PIRATE, POSO BUENO, PURE GOLD, ROCKER, STAR, SULPHIDE, SUMMER HOME, SUMMIT, AND SWASTIKA LODES,

IN OLD HAT MINING DISTRICT, PINAL COUNTY, ARIZONA

Containing an Area of ---------- *Acres.*

Scale of 400 *Feet to the inch.*

Variation 13° 45' E.

SURVEYED JUNE 9 - JULY 22 1941 *BY*

T. N. STEVENS

Mineral Surveyor,

The Original Field Notes of the Survey of the Mining Claim from which this plat has been made under my direction, have been examined and approved, and are on file in this Office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon, or for the benefit of, each location embraced in said mining claim by claimant or ITS *grantors and that said improvements consist of* 95 CUTS, 32 SHAFTS, 15 TUNNELS, 5 WINZES, 15 CROSSCUTS, 8 DRIFTS, 6 UPRAISES, 1 STOPE, AND 1 GLORY HOLE, TOTAL VALUE $57,461.70

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

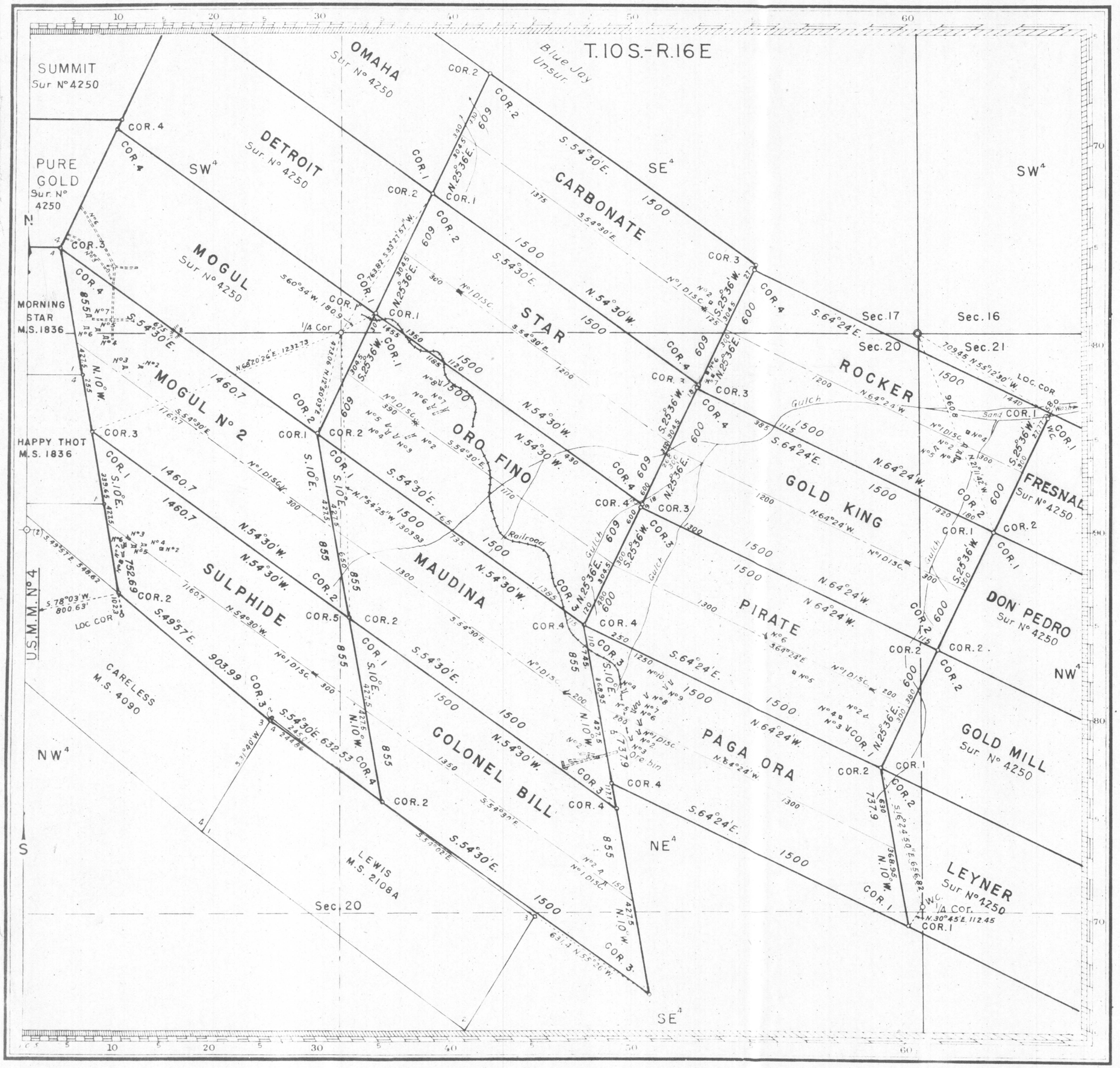
Public Survey Office Sherman C. Fiske

PHOENIX, ARIZONA *Office Cadastral Engineer*

MARCH 10, 1942 ARIZONA.

U. S. GOVERNMENT PRINTING OFFICE 1929

Southern Belle lies South 600'



Mineral Survey No. **4250** - SHEET 2

Land District.

PLAT

OF THE CLAIM OF

KNOWN AS THE

IN *MINING DISTRICT,*

COUNTY,

Containing an Area of *Acres.*

Scale of 400 *Feet to the inch.*

Variation

SURVEYED *19* *BY*

,

U.S. Mineral Surveyor,

The Original Field Notes of the Survey of the Mining Claim from which this plat has been made under my direction, have been examined and approved, and are on file in this Office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof

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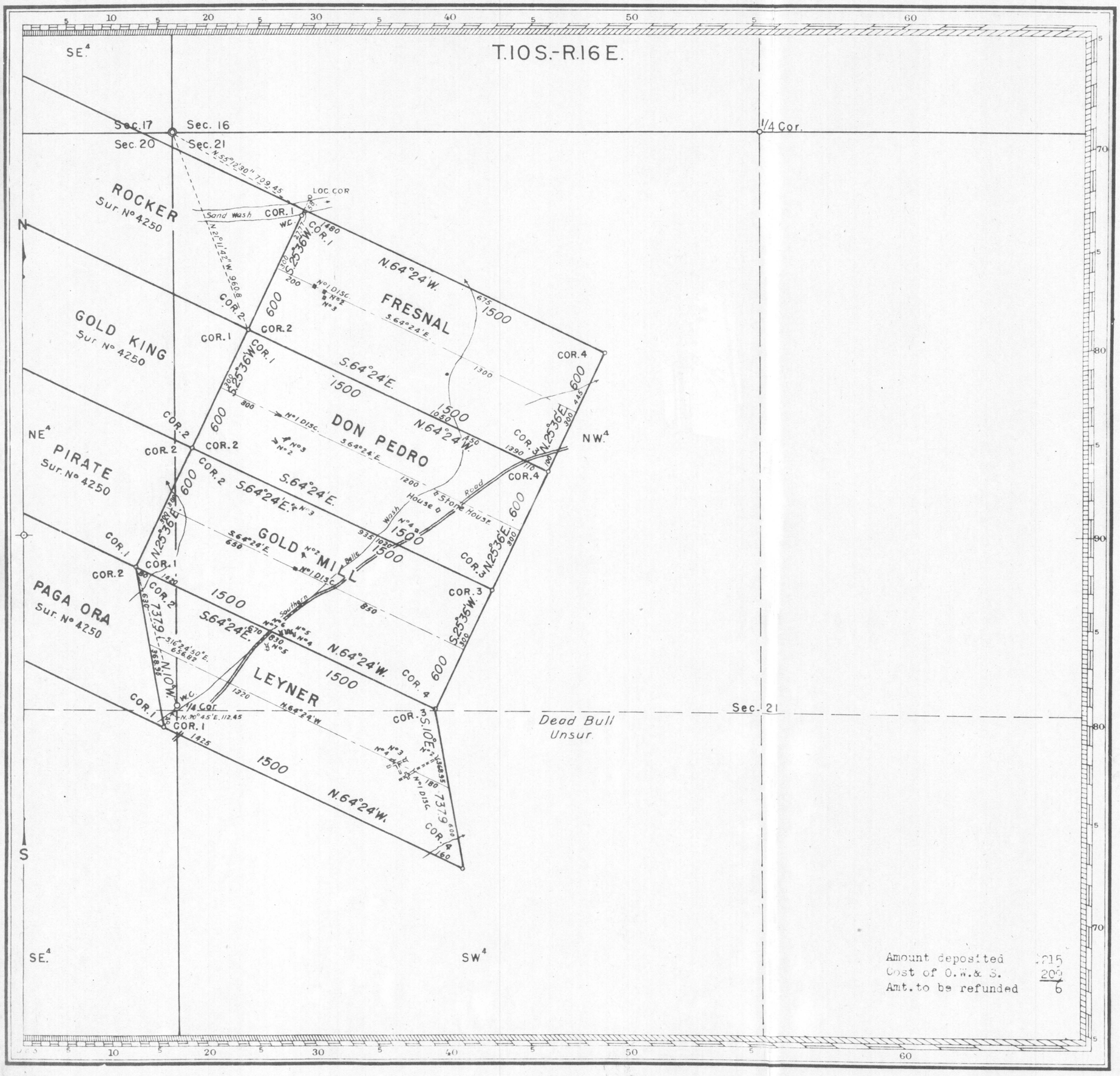
Public Survey Office

Office Cadastral Engineer

, 19

U. S. GOVERNMENT PRINTING OFFICE 1929



Amount deposited 215
Cost of O.W.& S. 209
Amt. to be refunded 6

Mineral Survey No. 4250 - SHEET 3

Land District.

PLAT

OF THE CLAIM OF

KNOWN AS THE

IN *MINING DISTRICT,*

COUNTY,

Containing an Area of *Acres.*

Scale of 400 *Feet to the inch.*

Variation

SURVEYED *19* *BY*

,

U.S. Mineral Surveyor,

The Original Field Notes of the Survey of the Mining Claim from which this plat has been made under my direction, have been examined and approved, and are on file in this Office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

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or

grantors and

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Public Survey Office

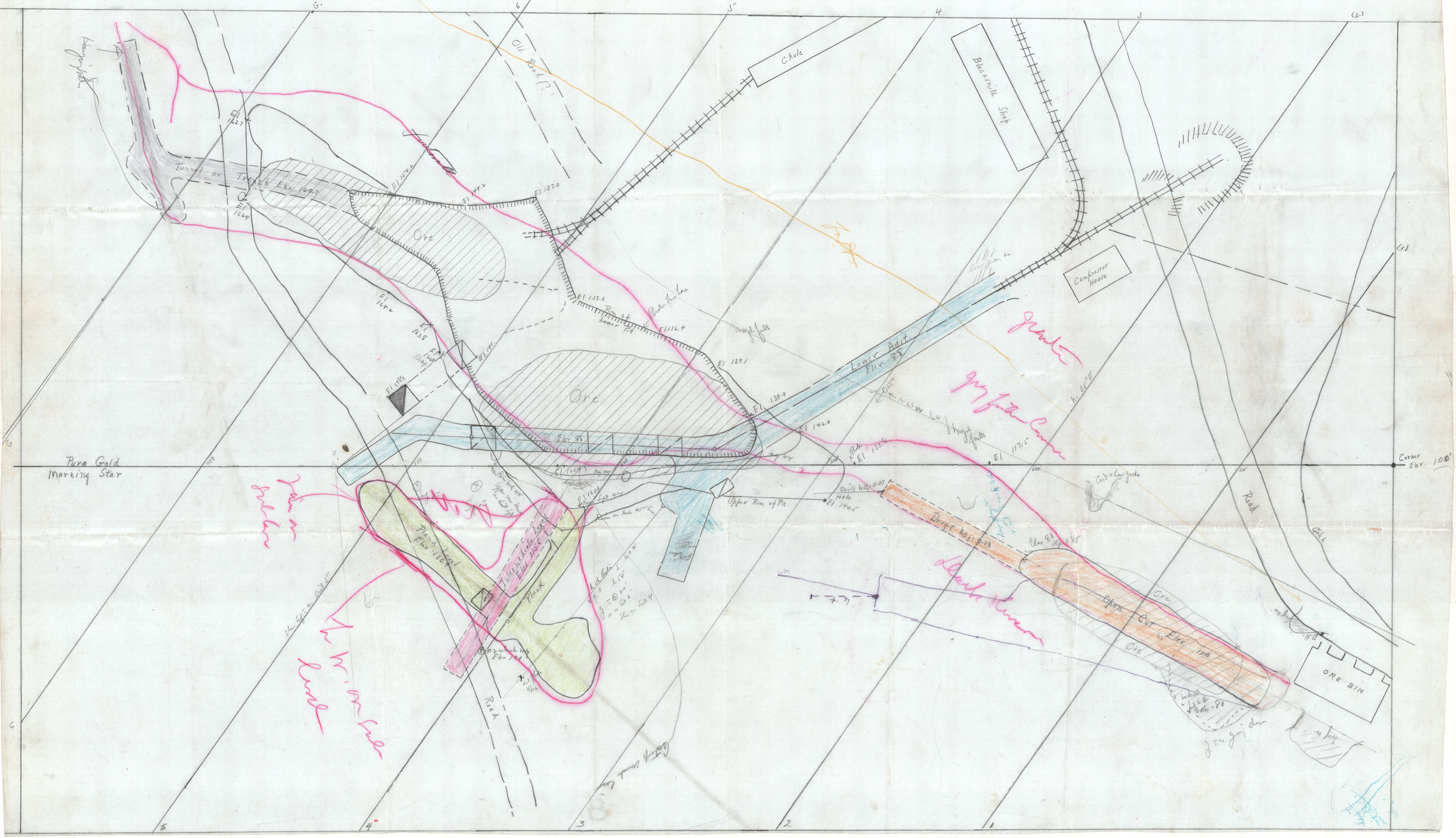
Office Cadastral Engineer

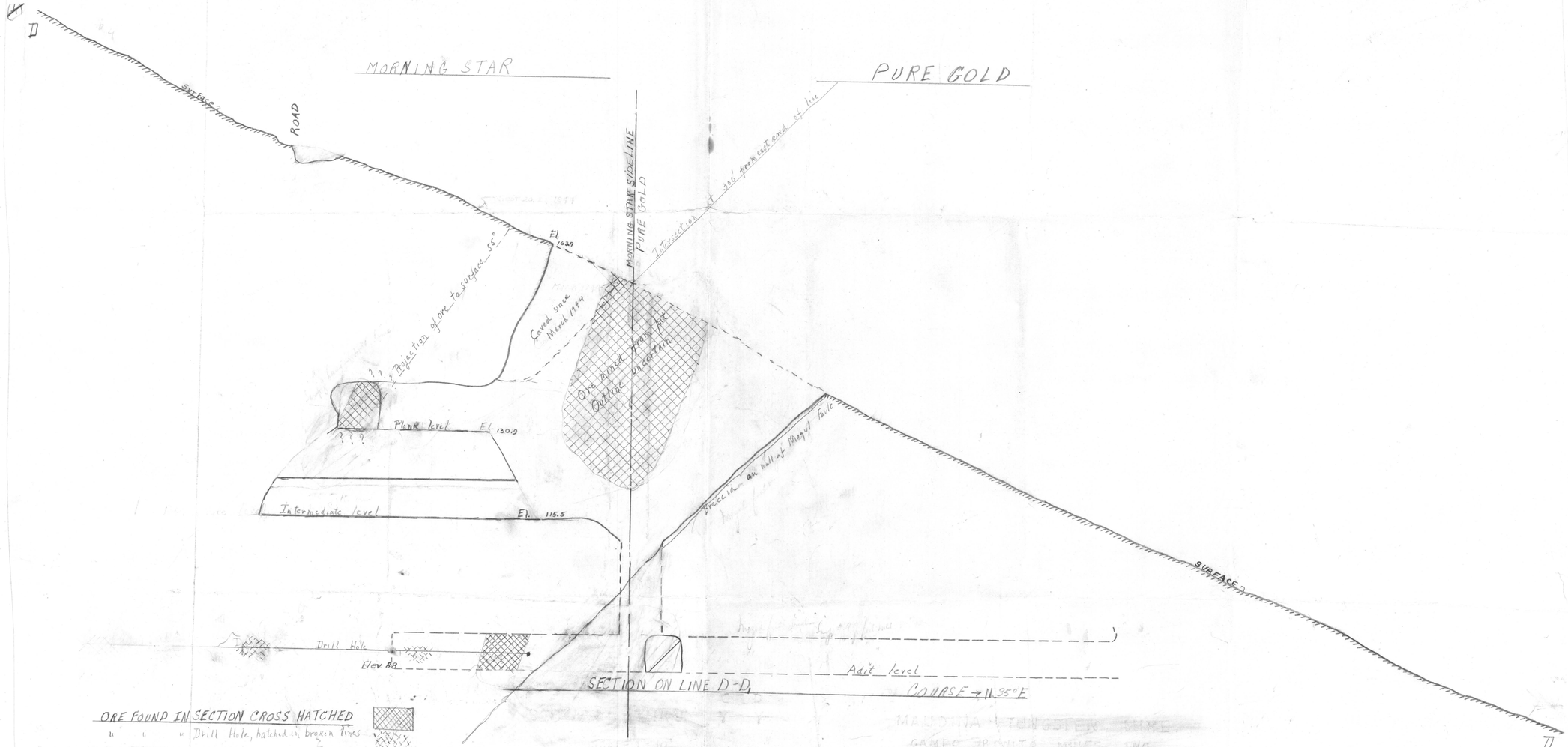
,19

U. S. GOVERNMENT PRINTING OFFICE: 1922

Plan Scale 10' = 1"
Showing Outcrops of Ore (hatched) (to be revised)

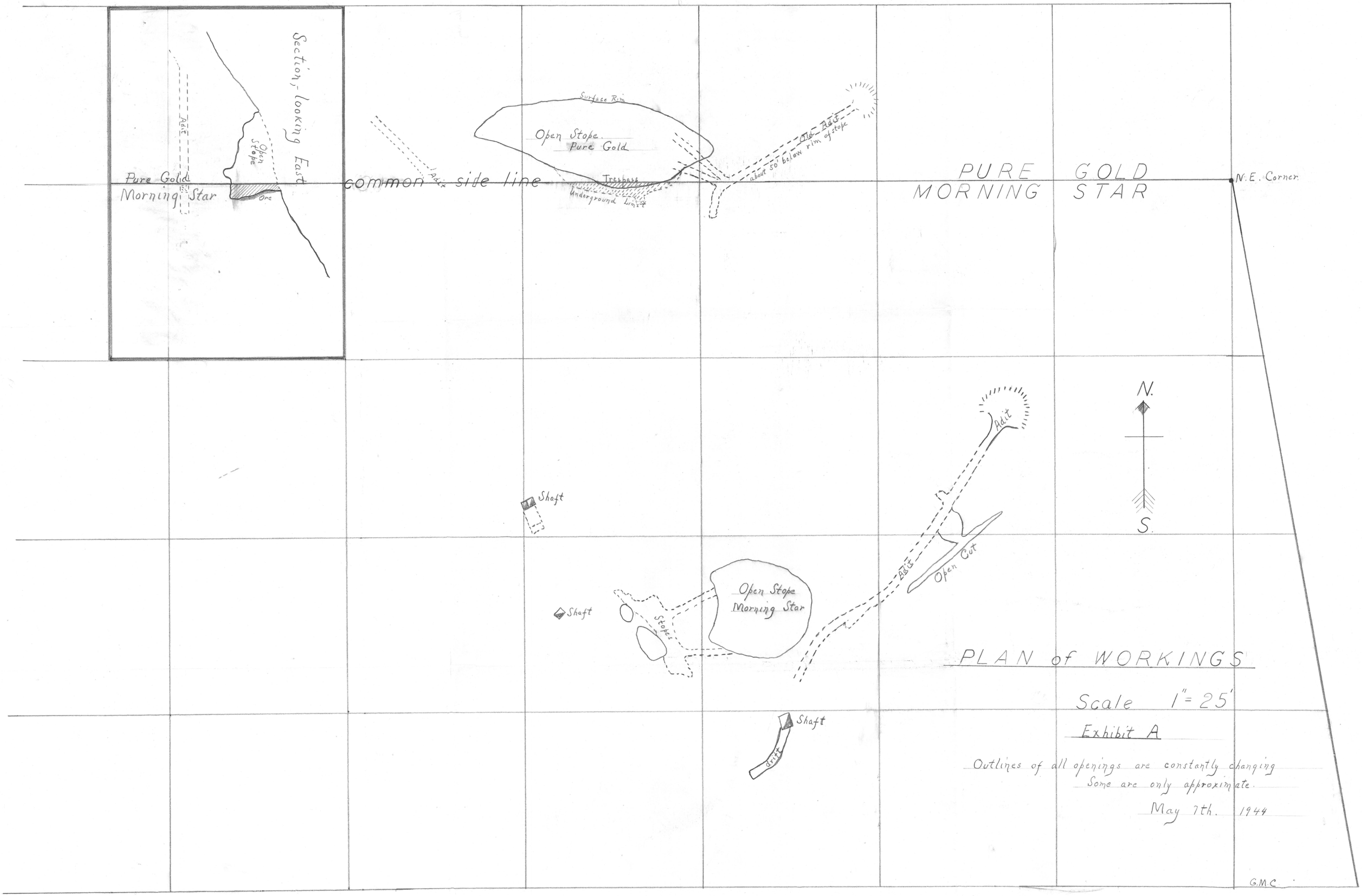
Corner in grove Elev 100





ORE FOUND IN SECTION CROSS HATCHED

" " " Drill Hole, hatched in broken lines


Section, looking East
Adit
Open Stope
Pure Gold
Morning Star
Ore
Surface Rim
Open Stope
Pure Gold
Trespass
Underground Limit
Adit
common side line
Old Adit
about 50' below rim of stope
PURE GOLD
MORNING STAR
N.E. Corner
N.
S.
Adit
Shaft
Shaft
Stopes
Open Stope
Morning Star
Adit
Open Cut
Shaft
drift
PLAN of WORKINGS
Scale 1" = 25'
Exhibit A
Outlines of all openings are constantly changing
Some are only approximate.
May 7th. 1944
G.M.C.

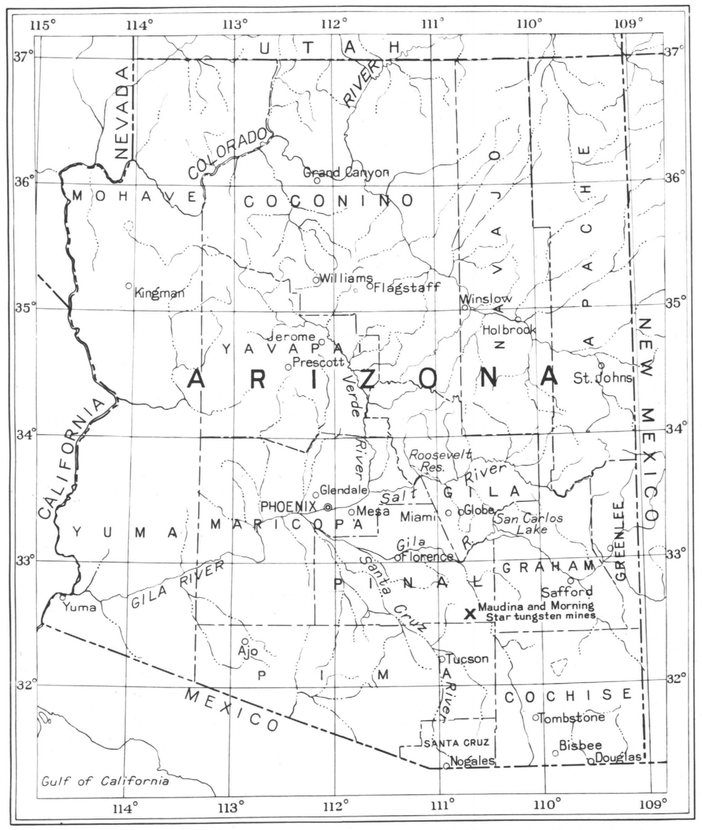


FIGURE I INDEX MAP OF ARIZONA SHOWING LOCATION OF MAUDINA AND MORNING STAR TUNGSTEN MINES, PINAL COUNTY

MAUDINA AND MORNING STAR TUNGSTEN MINES, PINAL COUNTY, ARIZONA

Deposits of scheelite (calcium tungstate) occur in silicified limestone breccia localized along the Mogul fault and its related structures at the Maudina and Morning Star mines, Pinal County, Ariz. The mines are in the northern part of the Santa Catalina Mountains, in the SW¼ sec. 17, T. 10 S., R. 16 E., Gila and Salt River Base and Meridian. The Pure Gold workings, the only active development on the Maudina property in January 1944, and the workings of the Morning Star mine are only 240 feet apart; both may be reached by 7 miles of fair gravel road from Oracle, Ariz.

The Morning Star mine was examined briefly in April 1943 by Konrad Krauskopf and Robert Stopper of the Geological Survey, United States Department of the Interior. In early January 1944, Paul C. Bateman and Max P. Erickson of the Geological Survey spent 3 days mapping and studying the deposits on both properties.

The principal geologic feature of this area is the Mogul fault which trends north of west across the Santa Catalina Range and brings Paleozoic and pre-Cambrian sedimentary and metamorphic rocks on the south into contact with pre-Cambrian granite on the north. The general dip of this fault is from 30° to 60° S. The fault includes many planes of movement over a wide area; the principal zone of brecciation is about 50 feet thick where it is exposed at the Pure Gold workings.

Scheelite mineralization occurs in silicified zones in a small body of limestone just south of the main fault zone. The limestone is bordered by pink quartzite on all sides except the northeast where it is cut off by the fault. Although the contact between the limestone and the quartzite is nowhere exposed, it seems probable that parts of it are faulted, especially to the south. The limestone is fine-grained and locally dolomitic. In most places bedding is not recognizable, but on the ridge southwest of the Pure Gold workings traces of bedding appear to strike N. 20° W. and to dip 75° E.

The Maudina property is owned by the Campo Bonito Tungsten Mines Company, Inc., and was operated in January 1944 by Edward H. Molson, in association with E. J. Ewing and I. M. McKinley, under lease and option from this company. A substantial amount of scheelite ore was produced during the first World War from old workings about 1,000 feet northeast of the Pure Gold development.

The deposit on the Pure Gold claim was discovered in the summer of 1943. Workings on this claim consist of an open cut, from which all the ore mined by January 1944 was produced; a 120-foot adit; and several trenches. Most of the ore was shipped to the Metals Reserve Company stockpile at Phoenix, Ariz. Molson planned, however, to ship the ore to the Hilton-Jacobs custom mill at Tucson as soon as reconstruction of that mill, in progress in January 1944, was completed.

During the latter part of December 1943 and in January 1944, more than 840 tons of ore containing at least 2.0 percent of WO_3 was shipped from the Maudina mine to the Metals Reserve Company stockpile at Phoenix. The rate of production in January 1944 was 24 tons of ore per day.

The Pure Gold ore body is localized in silicified breccia in the principal Mogul fault zone. The ore body appears to dip with the fault about 40° to 50° S. The ore zone ranges from 5 to 40 feet in width at the surface where it is exposed for a length of about 200 feet. It may continue under alluvium to the south and connect with a mineralized breccia exposed near the portal of the lower adit on the Morning Star property.

The 120-foot adit barely reaches the downward extension of the mineralized zone, 50 feet below the level of the open cut (section A-A'). Only a trace of scheelite appears under ultraviolet light in the face of the adit, and samples taken by B. H. Frisbie of the Reconstruction Finance Corporation contained only 0.14 and 0.05 percent of WO_3. The adit, however, does not penetrate the mineralized zone far enough to permit adequate sampling on this level.

About 300 tons of ore may be assumed per foot of depth, and the ore body may be expected to continue downward for at least 15 feet beneath the floor of the cut. On the further assumption that the grade of ore remains constant, this block consisting of 4,500 tons would contain 9,000 units of WO_3. Available information gives no basis for estimating how far the ore may persist below this depth.

The Morning Star mine, owned by Mrs. Elizabeth Lambert Wood, was leased in January 1944 by the Morning Star Mining Company which acquired the lease from the Fortuna Mining Company in August 1943. Total production from the Morning Star mine since 1940 amounts to an estimated 1,450 units of WO_3. The ore was treated in a small gravity mill about 1½ miles from the mine.

All the ore produced was mined from a glory hole and some small stopes west of the glory hole. Other workings comprise a haulage level for the glory hole and stopes, a 23-foot shaft, a 120-foot adit, and several small pits. In January 1944, the 120-foot adit was being extended to cut the ore zones in the glory hole at a depth of 60 feet below the bottom of the glory hole.

Scheelite in the glory hole and stopes is erratically distributed in an irregular, elongate body of silicified limestone that trends northeast. Large crystals of scheelite are concentrated along two faults which strike at right angles to each other, cutting the silicified limestone (Morning Star glory hole level, fig. 2). The northwest-trending fault, along which some post-mineral movement took place, offsets the southwest-trending fault about 10 feet. Under ultraviolet light, the ore along the faults appears in places to contain as much as 10 percent of WO_3 across widths of from 0.5 to 2.0 feet, although in most places the grade is not over 1 percent of WO_3. In the remainder of the silicified zone, scheelite is sparsely disseminated.

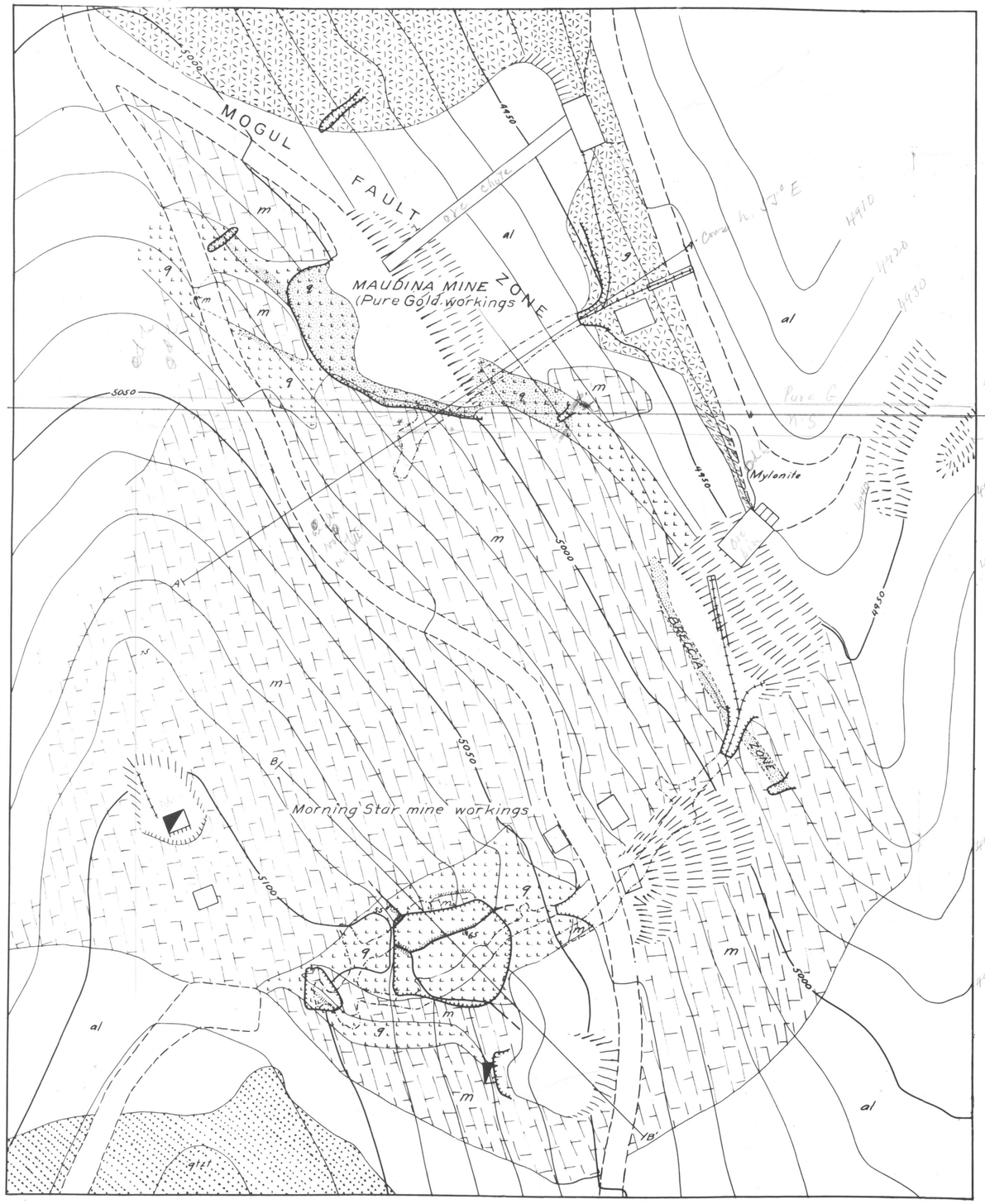
A 5-foot layer of silicified limestone breccia near the portal of the lower adit contains substantial amounts of scheelite so fine-grained that the WO_3 content is difficult to estimate under ultraviolet light. This zone may be a continuation of the ore zone on the Pure Gold claim. The first 60 feet of the adit is also in silicified limestone that contains little scheelite.

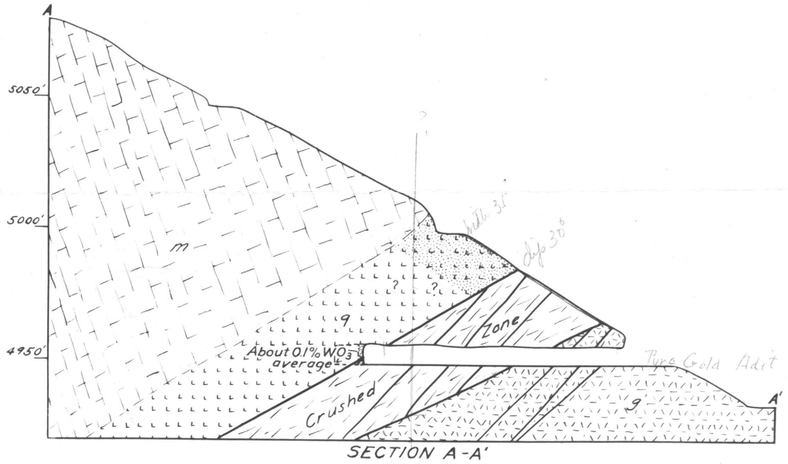
Reserves of ore beneath the glory hole and stope with at least 1.0 percent of WO_3 may amount to 2,000 to 3,000 tons. The extension of the Pure Gold ore zone may also contain reserves of commercial ore, but there was not sufficient information in January 1944 on which to base an estimate of its amount or grade.

The Mogul fault zone is believed to offer opportunities for further exploration which might lead to the discovery of additional ore bodies. The most favorable areas are those where limestone is adjacent to the fault.

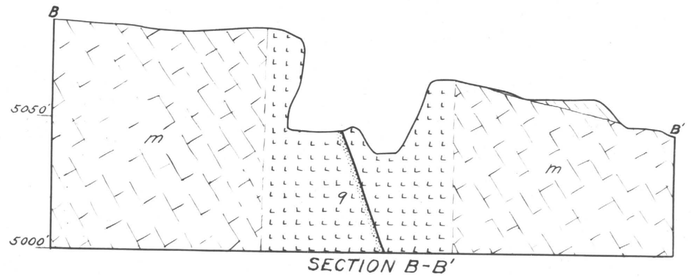
MAUDINA AND MORNING STAR TUNGSTEN MINES, PINAL COUNTY, ARIZONA

no mention of vein, ledge or lode tho only of ore bodies or ore zones.

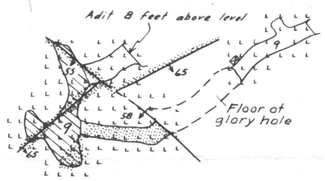




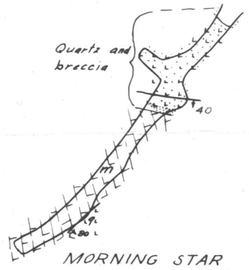
SECTION A-A'



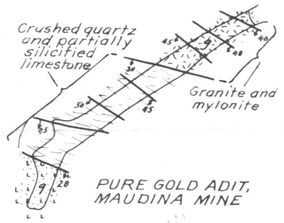
SECTION B-B'



MORNING STAR
GLORY HOLE LEVEL



MORNING STAR
LOWER ADIT



PURE GOLD ADIT,
MAUDINA MINE

EXPLANATION

al — Alluvium	g — Granite	Strike and dip of beds	Opencut
WO_3 Mineralization	m — Marble	Fault showing dip	Dump
q — Quartz and silicified limestone	qtzt — Quartzite	Underground workings	Stope

FIGURE 2

40 0 40 80 120 160 Feet (1"=40')

Contour interval 10 feet

Geology and topography by P. C. Bateman and M. P. Erickson
February 18, 1944

G-44

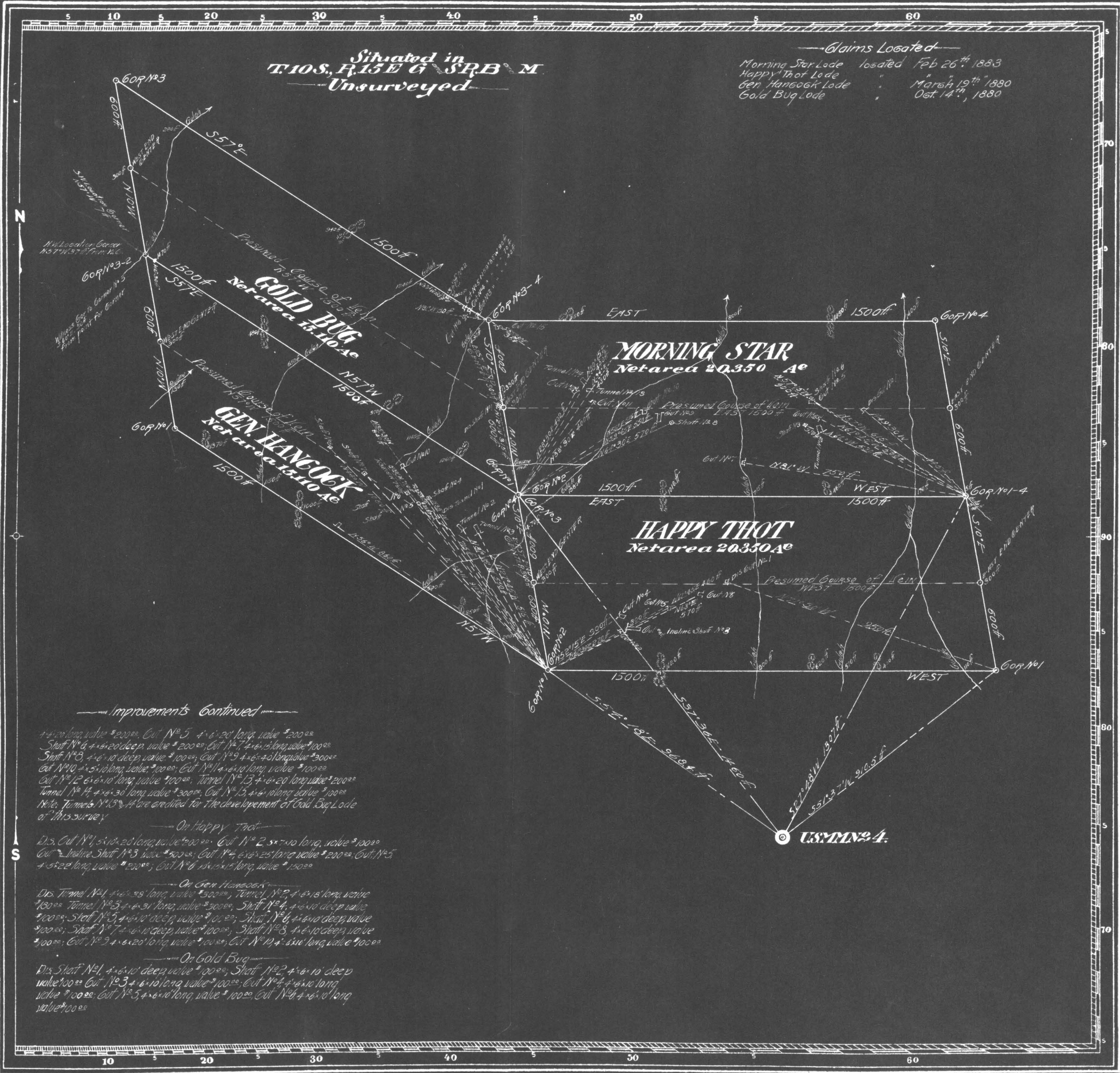
Mylonite - schist produced by dynamic metamorphism

MAUDINA AND MORNING STAR TUNGSTEN MINES, PINAL COUNTY, ARIZONA

S M C
Copy

Plot in claim line &
exact area of trespass

100.



—Improvements Continued—

4×6×20 long, value $200.00. Cut No 5, 4×6×20' long, value $200.00
Shaft No 6, 4×6×20' deep, value $200.00; Cut No 7, 4×6×15 long, value $100.00
Shaft No 8, 4×6×10' deep, value $100.00; Cut No 9 4×6×40 long value $300.00
Cut No 10, 4×5×10 long, value $100.00; Cut No 11 4×6×10 long, value $100.00
Cut No 12 6×6×10' long, value $100.00; Tunnel No 13, 4×6×20 long value $200.00
Tunnel No 14, 4×6×30 long, value $300.00; Cut No 15, 4×6×10 long value $100.00
Note: Tunnels No 13 and 14 are credited for the developement of Gold Bug Lode of this survey.

—On Happy Thot—

Dis. Cut No 1, 5×10×20 long, value $200.00. Cut No 2 5×7×10 long, value $100.00
Cut and Incline Shaft No 3 value $500.00; Cut No 4, 6×6×25 long value $200.00; Cut No 5, 4×5×22 long, value $200.00; Cut No 6 10×15×15 long, value $150.00

—On Gen. Hancock—

Dis. Tunnel No 1, 4×6×38' long, value $300.00; Tunnel No 2, 4×6×18' long, value $180.00 Tunnel No 3 4×6×31' long, value $300.00; Shaft No 4, 4×6×10' deep value $100.00; Shaft No 5, 4×6×10' deep, value $100.00; Shaft No 6, 4×6×10 deep, value $100.00; Shaft No 7 4×6×10' deep, value $100.00; Shaft No 8, 4×6×10 deep, value $100.00; Cut No 9 4×6×20' long, value $100.00; Cut No 10, 4×6×10' long, value $100.00

—On Gold Bug—

Dis. Shaft No 1, 4×6×10' deep, value $100.00; Shaft No 2 4×6×10' deep value $100.00 Cut No 3 4×6×10 long value $100.00; Cut No 4 4×6×10 long value $100.00; Cut No 5, 4×6×10' long, value $100.00, Cut No 6 4×6×10 long value $100.00

Claim Located 190 171

Mineral Survey No 1836

Lot No

Gila Land District.

PLAT

OF THE CLAIM OF

Thomas Wilson, Administrator James W. Fellow's Estate

KNOWN AS THE

Morning Star; Happy Thot; Gen. Hancock and Gold Bug

IN OLD HAT MINING DISTRICT,
PINAL COUNTY, ARIZONA
Containing an Area of 70.920 Acres.
Scale of 300 Feet to the inch.
Variation 13°E
SURVEYED JULY 9-14 1903 BY
Philip Contzen U.S. Deputy Mineral Surveyor,

The Original Field Notes of the Survey of the Mining Claim of Thomas Wilson Administrator James W. Fellows Estate known as the Morning Star, Happy Thot, Gen. Hancock and Gold Bug

from which this plat has been made under my direction, have been examined and approved, and are on file in this Office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

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—On Morning Star—

Dis. Cut No 1, 4×6×10 long, Value $100.00; Tunnel No 2, 4×6×35' long, Value $300.00; Shaft No 3, 4×6×10 deep, Value $100.00; Cut No 4

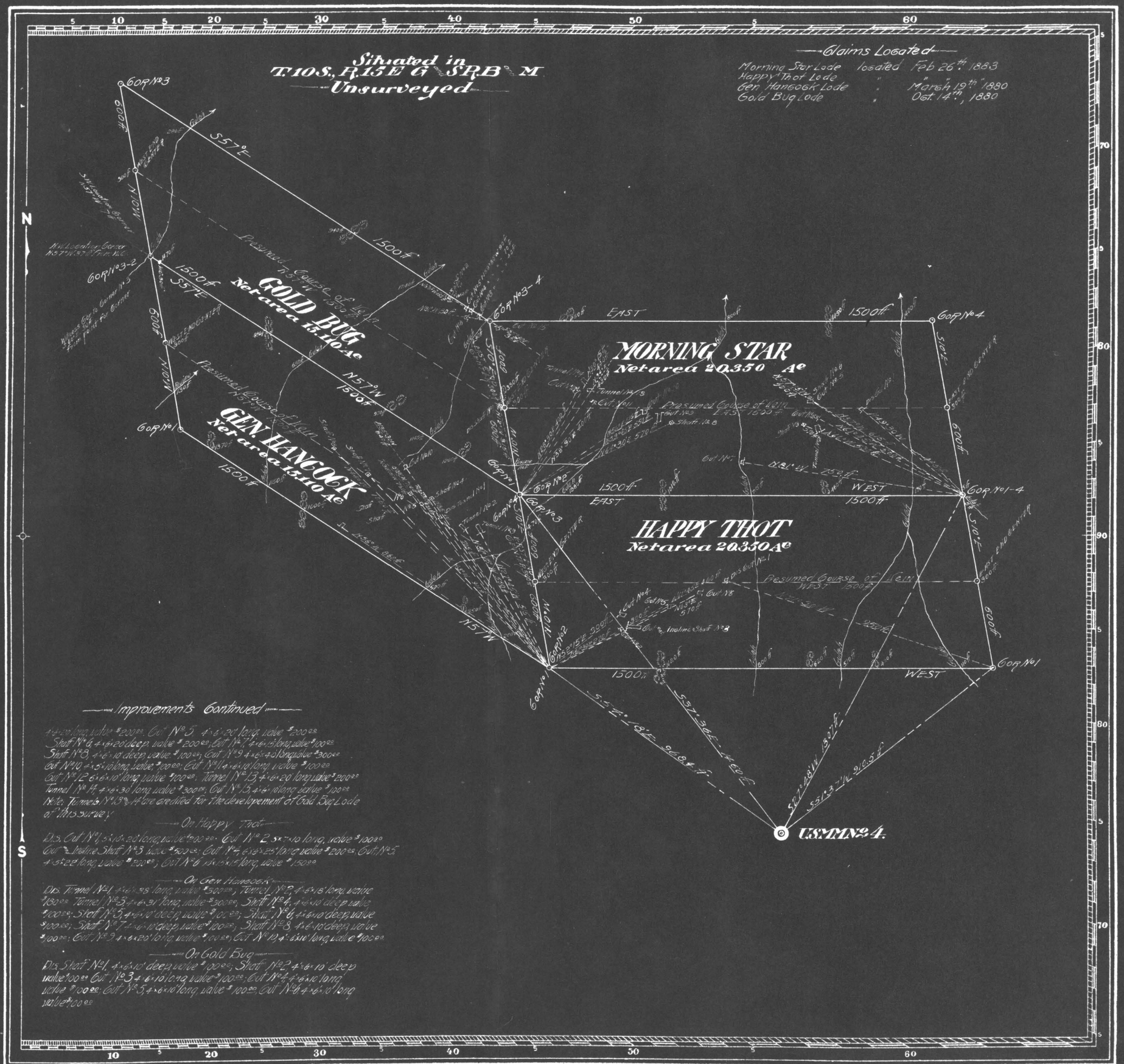
that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

U.S. Surveyor General's Office. Frank S. Ingalls
Phoenix, Arizona. U.S. Surveyor General for
Oct. 12th, 1903 ARIZONA

Survey Map of Morning Star

100.



Claim Located 190

Mineral Survey No 1836

L.O.T. No

Gila Land District.

PLAT

OF THE CLAIM OF

Thomas Wilson, Administrator James W. Fellow's Estate

KNOWN AS THE

Morning Star, Happy Thot, Gen. Hancock & Gold Bug

IN OLD HAT MINING DISTRICT, PINAL COUNTY, ARIZONA

Containing an Area of 70.920 Acres.

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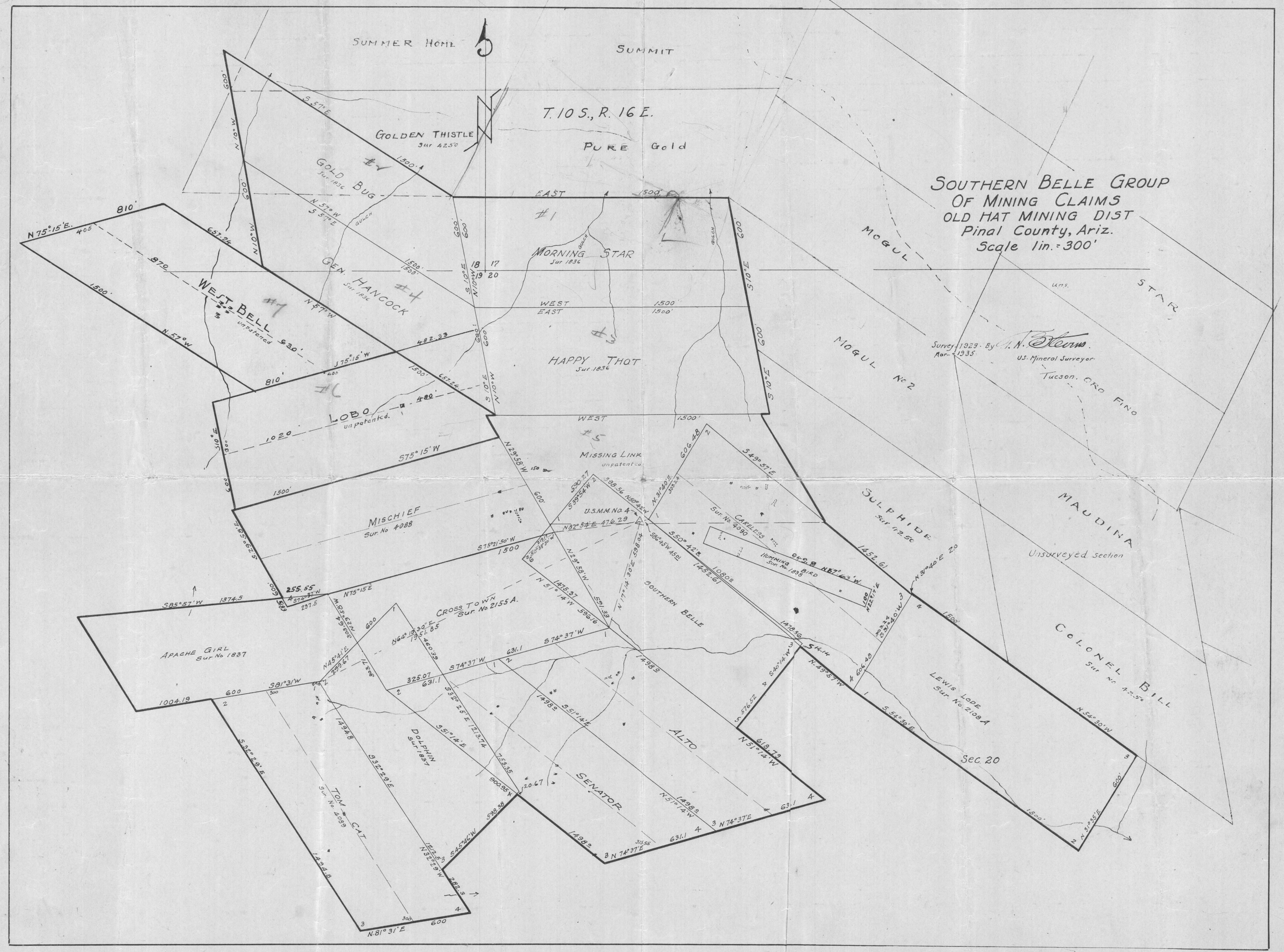
U.S. Surveyor General's Office. Frank S. Ingalls

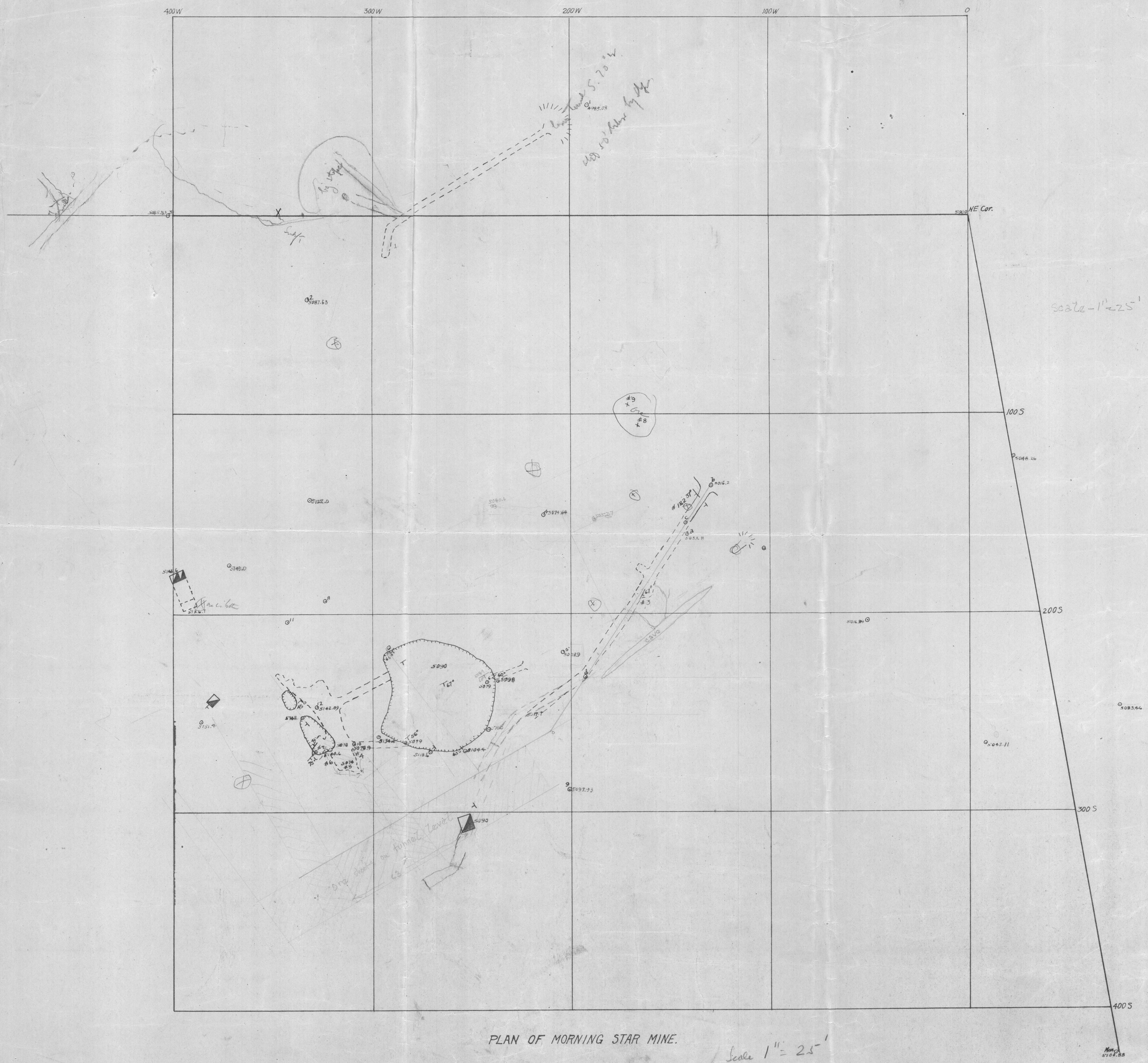
Phoenix, Arizona. U.S. Surveyor General for

Oct. 12th, 1903 ARIZONA

Morning Star. (Survey map


SOUTHERN BELLE GROUP
OF MINING CLAIMS
OLD HAT MINING DIST
Pinal County, Ariz.
Scale 1in. = 300'
Survey 1929 By
Mar. 1935
U.S. Mineral Surveyor
Tucson, ORO FINO
SUMMER HOME
SUMMIT
T. 10 S., R. 16 E.
PURE Gold
GOLDEN THISTLE
Sur 4250
GOLD BUG
Sur 1836
GEN. HANCOCK
Sur 1836
MORNING STAR
Sur 1836
HAPPY THOT
Sur 1836
MISSING LINK
unpatented
WEST BELL
unpatented
LOBO
unpatented
MISCHIEF
Sur No 4088
CROSS TOWN
Sur No 2155 A.
APACHE GIRL
Sur No 1837
DOLPHIN
Sur 1837
TOM CAT
Sur No 4089
SOUTHERN BELLE
SENATOR
ALTO
CARELESS
Sur No 4090
HUMMING BIRD
Sur No 1838
SULPHIDE
Sur 4250
LEWIS LODE
Sur No 2108 A
MOGUL
MOGUL No 2
STAR
MAUDINA
Unsurveyed section
COLONEL BILL
Sec. 20
U.S.M.M. No 4
#1
#2
#3
#4
#5
#6
#7

Claim Mazz Dist



PLAN OF MORNING STAR MINE.

Scale 1" = 25'

Local Map of Morning Star

Cancel to the code