INTERIM REPORT
on the
PICK MINING COMPANY PROPERTIES
in the
IVANHOE DISTRICT, ELKO COUNTY,
NEVADA

RECEIVED
JUL 27 1956

June 1, 1956

Raymond J. Garcia

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Approved by:

Dr. Leo J. Miller, Chief Geologist

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ABSTRACT

The Pick Mining Company owns 435 unpatented claims in the Ivanhoe Mining District about forty air miles northeast of Battle Mountain, Nevada, in Elko County, Nevada. The district is underlain by a series of Tertiary volcanics which have been faulted and gently folded. Ore production has until now come exclusively from opalites. The densest concentrations of the opalite masses are within the Butte mine, Silver Cloud mine, Fox mine areas. An altered zone outcrops on the A1 claims and an ore body has been discovered there.

Mapping of ore controls within the old mine workings was done, but extending these controls was not possible. Drilling was done with a Winter-Weiss portadrill, a CP 15 and a wagon drill. All drilling was extremely difficult. A total of 4733 feet was drilled from December 15, 1955 to May 20, 1956. All samples were assayed by the potassium thiocyanate method and a 5,000 ton ore body was discovered on the A1 claims.

Costs, during the drilling period only, amounted to $53,210.82. Total cost for the whole project was $116,317.26. The difficulty of the drilling and high cost of supplying such a remote camp together with a financial condition not conducive to long range exploration, precludes any recommendation for continuance of the drilling unless financial aid in the form of a DMEA loan or the acquisition of tax dollars can be secured.

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INTRODUCTION

The 435 claims owned by the Pick Mining Company lie at an average elevation of 5,000 feet about forty air miles north-northeast of Battle Mountain, Nevada, in Townships 37 and 38 North and Ranges 47 and 48 East, Mount Diablo Meridian. Graded roads provide the fifty-five miles of access to the heart of the district. (See Plate 1) The existing mines are covered by thirty-three patented claims, which had been leased by the company from their respective owners with options to purchase. (See lists)

The climate in the district includes sub-zero winter temperatures and 100° F. summers. While average snow depths are not excessive, frequent high winds cause drifting, which often makes roads impassable. Dry summers make all drainage intermittent, but numerous springs in the district provide perennial supplies of water for both domestic and operational use.

Vegetation consists dominantly of sage and wild grasses. There are no trees except a few cottonwoods along some of the major water courses. However, with all the apparent desolation, game abounds in the forms of deer, coyote, bobcat, and various rodents, as well as sharptailed grouse, ducks, geese, and a few chukar partridge.

PICK URANIUM CO.
Location Certificate

NO.	NAME	DATE	BOOK NO.	PAGE NO.	LOCATED BY AGENTS
1 through 40	Bloody Lode	5/10/55	36	391-430	L. L. Clements & Demars
1 through 40	Ruth	5/10/55	36	431-470	Roy E. Tyler-Henry Crew
1 through 40	Vern	5/10/55	36	471-510	Roy E. Tyler-Henry Crew
1 through 34	Marilyn	5/10/55	36	511-544	Roy E. Tyler-Henry Crew
35 through 39	Marilyn	5/10/55	37	196-200	Roy E. Tyler-Henry Crew
1 through 40	Roy	5/18/55	37	201-240	Roy E. Tyler-Henry Crew
1 through 28	Bill	5/18/55	37		
30 through 40	Bill	5/18/55	37	241-279	Roy E. Tyler-Henry Crew
1 through 4	Madge	5/18/55	37	280-283	Roy E. Tyler-Henry Crew
40	Marilyn	5/18/55	37	284	
29	Bill	5/18/55	37	285	

VERNON J. PICK
Location Certificate

1 and 2	Blue	5/26/55	38	85-86	Roy E. Tyler-Henry Crew
1 through 29	Don	5/26/55	38	92-120	Roy E. Tyler-Henry Crew
31 through 39	Don	5/26/55	38	121-129	Roy E. Tyler-Henry Crew
1 through 7	Mary	5/26/55	38	258-264	Roy E. Tyler-Henry Crew
1 through 40	Red	5/26/55	38	265-304	Roy E. Tyler-Henry Crew
1 through 10	Rock	6/13/55	38	375-384	Roy E. Tyler-Henry Crew
1 through 6	Dale	6/13/55	38	385-390	Roy E. Tyler-Henry Crew

PICK URANIUM CO.
Location Certificate

1 through 40	Ren	5/26/55	38	130-169	Roy E. Tyler-Henry Crew
21 through 40	Pick	5/26/55	38	170-189	Roy E. Tyler-Henry Crew
1 through 20	Glen	5/26/55	38	190-209	Roy E. Tyler-Henry Crew
1 through 8	Jay	5/26/55	38	210-217	Roy E. Tyler-Henry Crew
1 through 40	Reese	5/26/55	38	218-257	Roy E. Tyler-Henry Crew

AMENDED PICK URANIUM CO.

24 through 27	Bill	39	181-184	Henry Crew, Jr.
9 through 12	Bloody Lode	39	185-188	Henry Crew, Jr.
21 through 22	Bloody Lode	39	189-190	Henry Crew, Jr.
24 and 28	Bloody Lode	39	191-192	Henry Crew, Jr.

PATENTED CLAIMS LEASED

1 through 8	Harold's Club	Butte Group, Sec. 33, T. 38 N., R. 48 E.
through 12	Pickup	
6 and 7	Billy	
1 and 2	Clipper	Silver Cloud Group, Sec. 25 & 26, T. 37 N., R. 47 E.
0 through 8	Fox	Fox Group, Sec. 25, T. 38 N., R. 47 E.

GEOLOGY

Regional:

The District is underlain by a sequence of Tertiary volcanics, which include basalts, rhyolites, andesites, welded tuffs and opalites.[1]

A series of roughly parallel north-south trending normal faults give the district a questa-like topography. The presence of altered rocks in irregular masses of small areal extent may indicate buried intrusives, such as stocks in the central part of the district. Regional dip is generally east in most of the district regardless of faulting, since there is remarkable consistency in the relation of the downthrown to upthrown block. On the west side of the district, a comparatively dense swarm of faults appears, but, thus far, little or no production has been reported from the area.

All the ore mined to the present time has been taken from the opalite rich sections of the district, the ore occurring within the massive opalite itself or just beneath it in opalized ash or opalized soil profiles of older erosion surfaces. While mineralization has been found (through the Pick Mining Company's efforts) in other lithologic types, sufficient ore to guarantee a profitable mining operation is as yet lacking.

1. This term is commonly used in the region to include siliceous material of probable hot spring origin which is composed of chalcedony and opal occasionally associated to form agate and onyx.

Opalite Deposits:

The thirty-three patented claims cover the major opalite outcrops and it is from these that most of the mercury production for the district has come. The Butte group in Section 33, T. 38 N., R. 48 E., covers the flanks of Velvet Canyon and the hills to the west. Along the west flank of Velvet Canyon, trending north and south, is an elongate cluster of opalite outcrops. (See Plate 11) Near the largest of the masses are the Velvet mine workings; an open cut and roam along the uphill edge of the opalite, and a stope and lower haulage way connected by shafts to the surface through the stope.

Here the ore occurred in the massive opalite and directly beneath it in opalized ash and soil. Dips taken on the massive opalite showed rather precise conformity to the contour of the hill. While it could not be proven, it still seems likely, that a fault or fissure must exist in the subsurface within the area containing the opalite caps. Such a structure would, of course, provide ideal control for the localization of ore.

In the Fox group, Section 25, T. 38 N., R. 47 E., the ore mined came from a zone very similar in character to that of the Butte. (See Plate 111) Cinnabar was contained in the massive opalite and subjacent ash and soil layers. However, the opalite caps are more widely scattered than those in the Butte area and strangely enough, the mine underlies one of the smallest opalite masses in the area.

Near Flag No. 32, a large mass of opalite appears, but the outcrop and a shaft and pit at F6 and F7, respectively, have shown no noteworthy mineralization. Unmapped workings near the railroad tie shack at Flag No. 27 appear to be barren. These workings were probably begun to prospect the possibilities of the Governor fault near which they lie. The opalites in the

Fox area similarly to those of the Butte and Silver Cloud areas, have the structure and geologic position of sinter deposits of recent origin.

The Silver Cloud mine area has been the scene of extensive stripping and underground mining. The two claims (Clipper Nos. 1 and 2) on which the work was done are seven road miles south of the Butte area in Sections 25 and 26, T. 37 N., R. 47 E. A very large opalite cap lies immediately north of and uphill from the open pit. The conduit for this cap probably was the source of the solutions containing the mercury mined. Southeast of the pit is another chain of opalite outcrops, the fault control for which may be observed farther north in the open cut at S41. (See Plate IV) Shafts sunk at S19, S38 and S39 show the subsurface along the west side of the property to be a badly fractured obsidian. At S2 a shaft penetrates a westward dipping contact between the opalite cap and underlying ash eight feet below the surface. The ash, extending to the bottom of the forty foot shaft is badly brecciated with three sets of strong shears. Dips in the pit and on the opalite are generally south-southeast, but on the bench west of the pit, strong dips to the east may be observed. These may be drag along a normal fault.

At S44 in the creek east of the pit, cinnabar mineralized opalite outcrops. On the southwest side of the large opalite mass 2,000 feet southeast of the pit, more cinnabar mineralization can be found scattered through the rock.

Altered Areas:

While samples have been taken from each of the 435 staked claims, drilling has been performed on only one of the altered areas. On the A1 claims in Section 9, T. 37 N., R. 48 E., and exposure of altered material surrounded by basalt has been explored by drilling and cutting. (See Plate V) The

alteration agents were very likely hydrothermal solutions which percolated upward along the fracture planes in the breccia, healing them with clay. Sulfides of iron and copper have been emplaced as disseminated grains throughout the zone. Subsequent oxidation has resulted in the masking of the rocks by hematite stain and some limonite. Weaker fractures are lined with pyrite and greenish gypsum.

The drill holes encountered,at varying depths, a dark sulfide rich basalt which is partially altered to argillic minerals. While no surface trace of a fault can be found on the aerial photos, the brecciation was so intense that considerable movement is indicated.

Other altered areas appear on the aerial photos, but thus far no exploration has been directed toward them.

EXPLORATION

Mapping:

All mapping was done with a carefully aligned and collimated Gurley alidade and a plane table. While first order accuracy was not attempted, the traverses were closed and backsights were taken whenever possible to check operational accuracy. All the underground workings were mapped on a scale of an inch to ten feet. Dips and strikes of shears and bedding were taken in the Butte area and correlation of these features with ore was possible. Extension of the features as a guide for discovering new ore was not possible, however, because of the scarcity of fresh outcrops.

Surface mapping was restricted to opalites as a possible guide to planes of weakness, and vertical structures within the opalites are in most cases the point on which the station is set.

All workings were sampled by vertically cut channels from back to floor in increments to separate possible ore from obvious waste. Values for assays of samples cut down the walls were then plotted at their corresponding locations. Cat cuts on each claim were sampled and exploration cuts in the Butte and Al claim areas were sampled and mapped.

Drilling:

The first drilling was attempted with a company owned Winter-Weiss Portadrill on the Al claims. The unit performed satisfactorily, but a lack of surface casing allowed extreme collar washing, and holes T1, T4 and T5 had to be abandoned before the desired depths were reached. Concurrent mud conditions forced the rig out of the area when water haulage became impossible.

The five holes drilled encountered mineralization without exception and T4 contained ten feet of stripping ore. This information combined with sample results from the dozer cuts made the area look promising and it was then decided to return as soon as the ground dried.

The rig was moved to the Butte area, where of thirteen holes attempted only four could be driven to significant depths. Penetration of stringers of opalite proved nearly impossible with rock bits and completely unfeasible with diamond bits. Success of completion to desired depths depended solely upon the proximity to opalite caps or talus. Where these were encountered, failure was insured.

Setting casing was extremely slow and difficult with the Portadrill and, of course, angle hole drilling was impossible. The purpose of the proposed angle hole was to determine the exact location of a postulated plane of weakness, i.e. fault or fractures, along which the opalite conduits prob-

ably lay. A standard rotary core drill of the Sullivan type was believed essential.

Offerings to bid were let to several contractors. The results were disappointing. While footage bids were made on the rhyolite drilling, all the companies but one bid the opalite drilling on the basis of hourly operation with daily minimums. Some included payments for casing losses. The one footage bid averaged just over $10.50 for 500 foot holes.

It was decided in the light of the bids that a rental unit would be more economical. A Chicago Pneumatic N . 15 drill was found and rented and an angle hole collared at forty-five degrees below horizontal. The location was at the bottom of Velvet Canyon directly under the mine workings. Rock bits tipped with tube borium gave better footages than new bits, however, diamond bits were often wiped clean. Casing could not be run to stop caving because migration of the tools upward had left a crooked hole which reaming would not straighten. The hole was finally abandoned at 153 feet.

During the drilling of the angle hole, a wagon drill was contracted for the purpose of checking the opalites themselves for contained cinnabar. In an effort to extend the remaining ore in the Butte stope, holes were put down at BW's 1-4, 10, 20 and 24. Invariably, a large portion of the holes drilled could not be bottomed at the desired depth. Thus, while BW's 1 and 2 showed mineralization, the other holes could not be drilled deep enough to verify its extent.

It was found in subsequent drilling that most of the holes collared off the main opalites, and some of them collared on, could not be completed because of the presence of moist ash or soil beneath the cap. As long as the massive opalite persisted the hole could be kept open. (Two exceptions

were BW 34 and BW 35 which were drilled to 134 and 132 feet, respectively, in damp ash.) Locations were then confined to areas on or very near large opalite caps on mined ore bodies.

Three holes drilled on the massive cap southeast of the Silver Cloud open pit were among the deepest obtained with the wagon drill. SW 21 bottomed at 134 feet; SW 20 at 204 feet, and SW 24 at 140 feet. These holes were of particular interest because of the light they shed on the accuracy of previous geologic conceptions. It had been decided that the opalites were sinter deposits whose conduits followed planes of weakness to the surface. The following observations substantiate this conclusion. The fault at S 41 strikes generally north-south. It may or may not be the main fault, the mantle prevents verification. The long axis of the opalite cluster around S 47 also strikes north-south. S 47 is located directly atops a dike-like remanant of opalite. SW 21 was collared twenty-five feet from this wall of rock. It penetrated alternate zones of opalite with contained ash for 131 feet where a wet ash plugged the bit.

SW 22 is only forty feet farther east (at right angles to the strike of the opalite) and yet it is collared in ash and could not be drilled below thirty-three feet. Holes SW 23 and 24 are located on vertical structures within the opalite cap and penetrated opalite for their total depths except for an occasional opalized rhyolite zone. It would appear that the holes followed the margin of irregular near vertical conduits and sometimes cut a protrusion of rhyolite wall rock. Disappointing, of course, was the lack of mineralization.

With the completion of the minimum footage allowance for the wagon drill, and the arrival of warmer weather, the Portadrill was returned

DRILL HOLE TABULATION

BUTTE AREA

Drill Hole No.	Min[3]	Depth	Ore
DB 6	X	40	
7		153	
8		30	
9		150	
10		7	
11		32	
12		320	
13		315	
	Total	1047	
BW 1	X	24	
2	X	53	
3		21	
4		13	
5	X	51	
6	X	22	
7	X	15	
8	X	21	
9	X	12	
9A		12	
10	X	18	
11	X	8	
12 & 12A		23	
13		35	
14		21	
15		10	
16		10	
17		9	
18		21	
19		52	
20		17	
21		17	
22		11	
23		6	
24	X	18	
25		11	
26	X	6	
27	X	9	
28		9	
29		6	
30		7	
31		33	
32		14	
33		18	
34		134	
35		182	

3. Any hole containing 1 foot of .20 lbs. or more of Hg. is considered mineralized.

Drill Hole No.	Min.	Depth	Cre
BW (Cont.)			
BW 36 & 36A		47	
37		66	
38		54	
39		35	
40		17	
27A (Drilled with Porta drill)		210	
	Total	1384	
Silver Cloud Area			
SW 1		51	
2	X	36	
3	X	21	
3A	X	36	
3B		15	
3C		18	
4 & 4A	X	33	
5		18	
6	X	36	
7		22	
8		10	
9		21	
10		13	
11		32	
12		18	
13		9	
14	X	50	
15		18	
16		22	
17		18	
18		15	
19		33	
20		31	
21		134	
22		33	
23		204	
24		146	
	Total	1098	
Al Claim Area			
T 1	X	130	
2	X	105	
3	X	170	
4		75	X
5	X	135	
6		285	X
7		201	
8		105	

Total Contracted Footage	2270
Total Company Drill Footage	2310
Total Rental Drill Footage	153
Grand Total for Project	4733

to the A1 claims.

Three more holes were drilled with two completed and one abandoned. One hole contained ore grade material for ten feet.

ORE DISCOVERIES

The term "ore" is a rather loosely used word in most mining circles, so for the purpose of this report we will define it. Ore is a mineral bearing mass of rock of high enough grade and large enough tonnage that it can be mined profitably. In the light of this definition there was one ore body discovered in the Ivanhoe District. An occasional pod of mineralization of sufficient grade to meet minimum requirements was found but in only one case could the tonnage minimum be approached.[2]

On the south side of the Butte stope a face averaging 11.28 pounds for thickness of 6.6 feet remains, but drilling could not extend the values to block out enough tons to justify mining. In the Fox mine, as well as the Silver Cloud workings, a few samples of ore grade can be cut, but tonnages are lacking because of thinness and small lateral extent.

Under the opalite cap indicated by station B 13 south of the Velvet workings, ore grade material was cut by BW 6 from six to nine feet. This three foot interval of 8.6 pounds might yield an extreme maximum, using a twelve cubic foot tonnage factor, of 275 tons. (See Plate VI).

Northeast of S 15 in the Silver Cloud area, one pod of ore grade was penetrated by SW 2. The interval from six to nine feet contained 12.5 pounds per ton but, again, only about 200 tons are indicated. SW 3 A contained two feet of seven pound material from thirty-two to thirty-four feet.

2. Minimum allowable grade for stripping to fifty feet has been set at five pounds per ton. For underground mining minimum grade has been set at nine pounds per ton.

Noteworthy is the fact that the long axis of the mineralized mass extends radially from the opalite cap center at S 13 and nearly parallels the workings between S 10 and S 31 (Plate IV).

The largest mass of ore grade rock was found on the A1 claims in holes T4 and T 6. The interval from thirty to forty feet in T4 contains 6.67 pound ore. In T6 two sections from 115 to 120 feet and 180 to 185 feet contain 6.35 and 6.40 pounds of mercury, respectively. This ore body as it is presently defined can contain an extreme maximum of 5,000 tons. The relative vertical positions of the ore sections in the holes can be seen in the inset on Plate VII.

Determination of grade was performed in an assay laboratory built at the field camp. The potassium thiocyanate titration method was used for a assaying since it is the only method by which accuracy and consistency may be obtained. Procedure for the titration method is listed below.

To exactly one gram of pulverized sample, add a gram of flux consisting of half and half copper and calcium oxides.

Mix thoroughly and place in test tube not less than six inches long.

Place only bottom of tube (portion containing sample) horizontally into furnace or Fisher burner flame. Rotate to heat all sides of sample cherry red.

Remove from furnace before moisture ring migrates to mouth of tube. Hold tube horizontal at all times.

Fracture bottom of tube (end containing sample) by covering with cold wet cloth and strike off with knife or spatula.

Wash remainder of tube and contents in 25 or 30 ml. of boiling nitric acid in 100 ml. beaker.

Rinse tube with few drops of distilled water draining carefully into acid and discard tube remains.

Stir into cooled acid two or three drops of saturated potassium permanganate solution to obtain color. Clear the solution by stirring in one drop of hydrogen peroxide.

Add one dropper full of Indicator Solution made up by dissolving twenty grams of ferric sulfate in 500 ml. of distilled water.

Titrate using 100 ml. of 1/200 normal potassium thiocyanate solution. (May be made by dissolving 4.856 grams of potassium thiocyanate in 1000 ml. of distilled water to make a 1/20 normal solution. Then dilute to 1/200 normal in convenient amounts).

Stir while slowly adding potassium thiocyanate solution from the burett. The stoichiometric point is reached when the first streak of brown color appears and does not clear away.

Values may be read directly from the burett. Each ml. of solution used corresponds to one pound of mercury per ton of sample.

ASSAY LIST

BUTTE AREA DRILL HOLES

Hole No.	Depth	Value (lbs. Hg/ton)
BW1	12-15	.25
	15-18	1.95
	18-21	1.02
	21-24	.88
BW2	12-15	.70
BW5	3- 6	.60
	6- 9	4.20
	9-12	.40
	12-15	.60
	18-21	.80
	48-51	.20
BW6	3- 6	.50
	6- 9	8.60
	9-12	1.10
	12-15	1.70
	15-18	.70
BW7	6- 9	1.29
	9-12	1.41
BW8	0- 3	1.70
	3- 6	.60
	6- 9	.70
	9-12	1.90
	12-15	.40
BW9	3- 6	.70
	6- 9	1.60
	9-10	.70
BW10	3- 6	1.75
	6- 9	2.00
	9-12	.15
BW11	3- 4.5	1.00
	5- 6	.60
	6- 7	.40
	7- 8	1.10
BW24	9-12	3.80
BW26	3- 6	1.40
BW27	12-15	.70
BW28	6- 9	.20
DB 6	5-10	.28
	10-15	.32
	15-20	.40
	20-25	.65
	25-30	.55
	30-35	.70
	35-40	.30

SILVER CLOUD AREA DRILL HOLES

HOLE NO.	Depth	Value (lbs. Hg/ton)
SW 2	8- 9	12.50
SW 3	20-21	.65
SW 3A	7- 7.5	3.00
	18-21	.40
	21-24	1.20
	24-27	1.00
	27-30	1.40
	30-32	2.10
	32-33	6.70
	33-34	7.30
SW 4 & 4A	3- 4	4.40
SW 6	9-12	2.60
	12-15	.70
	15-18	.90
	18-19	.70
	22.5-23.5	.60
	27-30	.20

AL CLAIMS DRILL HOLES

Hole No.	Depth	Value (lbs. Hg/ton)
T 1	35-40	1.20
	50-55	1.10
T 2	30-25	.35
	55-60	.35
	60-65	.35
	65-70	2.55
	70-75	.80
	75-80	.30
	80-85	.32
	85-90	.34
T 3	50-55	.58
	55-60	2.45
	60-65	.65
	65-70	.30
	130-135	.80
T 4	25-30	1.00
	30-35	6.80
	35-40	6.55
	40-45	2.50
	45-40	3.90
	50-55	.35
	55-60	1.15
	60-65	.60
	65-70	.70
	70-75	1.65
T 5	5-10	
		.35

AL CLAIMS DRILL HOLES (Continued)

Hole No.	Depth	Value (lbs. Hg/ton)
T 5	10-15	.35
	15-20	1.25
	20-25	1.70
	25-30	.85
	30-35	.70
	35-40	.30
	40-45	.50
	45-50	.52
	50-55	.48
	55-60	.30
	110-115	.30
	115-120	.55
	120-125	.65
	125-130	.40
	130-135	.55
T 6	105-110	.20
	110-115	.20
	115-120	6.35
	120-125	1.35
	125-130	.30
	130-135	.60
	135-140	.20
	175-180	.20
	180-185	6.40
	185-190	1.20
	190-195	3.00
	195-200	2.10
	200-205	.90
	205-210	1.50
	210-215	1.30
	215-220	.50
	220-225	.70
	225-230	.35

COST OF OPERATION

The activities in the Ivanhoe District began during February of 1955. During the balance of the year, claim staking and location work, surface exploration by means of dozer cutting, sampling, mine mapping, surface base mapping and establishment of a camp were carried on. On December 15, 1955 the portadrill, brought from Colorado, collared its first hole. Drilling was carried on intermittently from then to the end of the project with the portadrill, the rental CP 15 and a contract wagon drill. Costs from the first of December to May 20, 1956, total $58,210.82 for 4,733 feet of drilling. Of these totals, $3,075.95 was for 2270 feet drilled on contract by the wagon drill. Direct charge for the rental unit including replacement of lost or damaged equipment was $2,081.70. A proration of the other project expenses to this rig brings its per foot cost to $90.51. Unit costs for the portadrill and wagon drill are $13.61 and $2.69, respectively. (See drilling costs sheets)

A listing of the expenditures since the beginning of the project has been compiled from the company auditing department records and appears on the Project Costs sheet. These costs are all inclusive and may be considered a maximum figure for the Ivanhoe District operation to May 20, 1956.

DRILLING COSTS
December 1, 1956 to May 20, 1956

	December	January	February	March	April	May	TOTALS
Salaries	$4,126.00	$4,413.75	$3,106.48	$3,716.00	$3,709.00	$ 3,513.00	$22,584.31
Food	357.18	429.57	526.70	220.62	276.45	337.62	2,153.54
Supply & service	686.33	1,420.09	1,665.53	1,016.74	1,097.47	844.10	6,831.22
Drills	- -	288.89	721.36	2,557.25	712.69	4,198.39	8,528.47
Expense Accounts	1,074.37	586.94	1,182.30	398.45	139.33	1,242.56	4,674.03
Caterpillar	460.00	64.35	47.37	- -	- -	- -	571.72
Insurance	- -	336.31	153.20	- -	932.08	- -	1,421.59
Lease payments	550.00	550.00	550.00	550.00	550.00	- -	2,750.00
Travel and Telephone	13.62	46.22	137.04	4.83	64.48	5.37	262.06
Miscellaneous	- -	- -	10.00	- -	- -	- -	10.00
	$7,267.56	$8,136.51	$8,099.98	$8,520.00	$7,521.45	$10,791.44	$49,786.94
Depreciation							$ 8,423.88
TOTAL							$58,210.82

1753

PROJECT COSTS

	1955	1956 to May 20	Credits	Totals
Labor	$24,150.62	$20,084.25		$ 44,234.87
Misc. (Incl. Food)	11,516.78	5,543.99		17,060.77
Purchase Payments	3,300.00	2,200.00		5,500.00
Gas, oil & grease	2,447.29	2,103.21		4,550.50
Equipment repair	2,776.27	1,168.33		3,944.60
Contract drill		3,485.55		3,485.55
Bits and steel	402.52	3,008.60		3,411.12
Travel	2,365.14	693.32		3,058.46
Cost of filing claims	2,427.00			2,427.00
Equipment rental	662.79	1,162.88		1,825.67
Assaying	1,146.64	25.87		1,172.51
Tires and tubes	517.63	163.86		681.69
Professional fees	472.49			472.49
Tools	137.54	44.03	$57.49	124.88
Office Supplies	105.17	15.02		120.19
Maps and blue prints	104.07	6.63		110.70
Dues & subscriptions		100.00		100.00
Telephone & telegraph	27.34	67.09		94.43
Sundry taxes & licenses	74.39			74.39
Sub totals	$52,633.88	$39,873.23	$57.49	$ 92,449.62
Non-direct & misc. depreciation	$20,428.01	$ 3,439.63		$ 23,867.64
Totals	$73,061.89	$43,312.86	$57.49	$116,317.26

CONCLUSIONS and RECOMMENDATIONS

Geologically, the district is very promising. It has an extremaly wide distribution of mineralized outcrops, it exhibits good evidence for the existence of favorable ore control (such as near surface intrusives, faults and host rocks); and it contains areas which have undergone chemical changes conducive to the introduction of mineralizing solutions.

The best area is that covered by the Al claims and, as would be expected from the conditions, it is here that the largest ore thickness occurs. These conditions include brecciation and alteration, known to extend at least 285 feet downward, and the emplacement of the sulfides of iron, mercury and copper. The presence of a near surface basalt mass, partially altered and shot through with fresh pyrites, attests the hydrothermal action which took place.

Groundcover and erosion are such that, except for opalites, outcrops are compartively rare. Exploration drilling within opalite areas must be confined to cable tool rigs. Costs are exceptionally high in the flow covered areas for rotary drills and core recovery is notably low. These features are common, however, to other areas and cannot be considered insurmountable physically or exhorbitant financially if normal exploration deductions can be taken.

However, since no deductible dollars are available to the Pick Mining Company for the balance of 1956 or 1957, it is recommended that exploration in the Ivanhoe District be discontinued until tax dollars become available or a DMEA loan be secured.

One of the normally disadvantageous features of a loan for preliminary exploration is the requirement for a complete preplanned drilling program.

can be considered

This provision may limit the most efficient use of footage in case the information gained in early drilling indicates a drastic revision in drilling operation and footage distribution. The stigma of any such possibility has been removed in this case, because the preliminary work has been done and a preplanned program is not only feasible but desirable. Relinquishment of the leased claims automatically removes the problems of the opalite areas and simultaneously limits the favorable areas to the volcanic type which are all covered by company claims.

Assessment work requirements have been filled for the period ending June 30, 1956. Future work must commence on or before July 1, 1957. This should be ample time for disposal of the ground if the loan or some other exploration aid cannot be implemented.

PROPOSED EXTENSION OF DRILLING

Upon the granting of a DMEA loan, the drilling program shown on Plate V A is proposed. The first area to be considered is the Al claim group. Since no assurance can be had that the loan will be granted, it seems unwise to continue the monthly payments necessary to hold the patented claims which, of course, cover the opalite areas. Furthermore, the opalite deposits have been relatively small and exploration costs are large. The volcanic type mercury deposit has proven to be more productive and the Al claim area is of that type. This is the only place a commercial body of ore was found during the company's drilling.

The first stage drilling would give structural control over the area as a whole, allowing the determination of the vertical rake of the altered zone, identification of the subsurface basalt structure, correlation of significant units and discovery of any other notable structural features. These holes should be cored to 500 feet.

Second stage drilling should be directed at the general blocking out of the limits of the ore already known to exist. Third stage drilling would then be aimed at more detailed outlining of the ore body. Second and third stage operation should be to 250 foot depths maximum. Of course, the information from holes already drilled will be used insofar as possible. All core should be at least NX in size to facilitate better recovery in the breccia zones. Previous experience has shown that short runs (five feet or less) may also be necessary.

The revised cost estimate of $94,668.45 as submitted to the Administration in the amended cost estimate for a five month period, appears to be too low. While some reduction can be made in the operation and overhead expenses, the footage alone will exceed the estimate. An analysis of three bids submitted by independent drilling contractors shows the footage cost to be much too low. The average of the three bids is $9.64 per foot. One company has submitted a bid much lower than the other two. Their bid also omits the mention of charges for cementing or casing, but these operations will certainly be necessary in the breccia zones of each hole. The Pick Mining Company cost for the portadrill ($13.61 per foot) appears to be high for normal operation, since these costs were incurred during the winter and early spring. It is this writer's opinion that costs including cement and casing should not exceed $12.00 per foot and that, the average of the bids above is about right for drill footage only.

As for operational expenses the following breakdown appears realistic in the light of the location of the project, terrain and climate.

Estimate of costs; two rigs drilling 10,000 feet in five months (two periods of eleven days each per month.)

Drilling, 10,000 feet @ 12.00 per ft.	$120,000.00
Salaries:	
Geologist - assayer @ $750 per mo.	3,750.00
Surveyor - sampler @ $500 per mo.	2,500.00
Cat operator @ $500 per mo.	2,500.00
Supervisory (Part Time Basis) $200 per mo.	1,000.00
Assay chemicals and glassware	700.00
Equipment maintenance	1,000.00
Gas, Oil, Diesel Fuel & Butane	1,500.00
Food and lodging @ 8.00/day/man	1,960.00
Depreciation:	
Bulldozer D 6 @ $9000 value	750.00
One Jeep Universal $1150 value	95.85
One Ford 3/4 Ton Pickup $1500 value	125.00
Two Trailers @ $500 value each	83.00
Alidade, plane table and stadia rod	500.00
Office Supplies	50.00
Miscellaneous	500.00
	$137,133.85

Two other altered areas should be mapped, cut open and sampled concurrently with the drilling performed on the Al claims. If these areas are favorable geologically, an attempt should be made to explore them further by drilling or whatever other method seems advisable at the time.

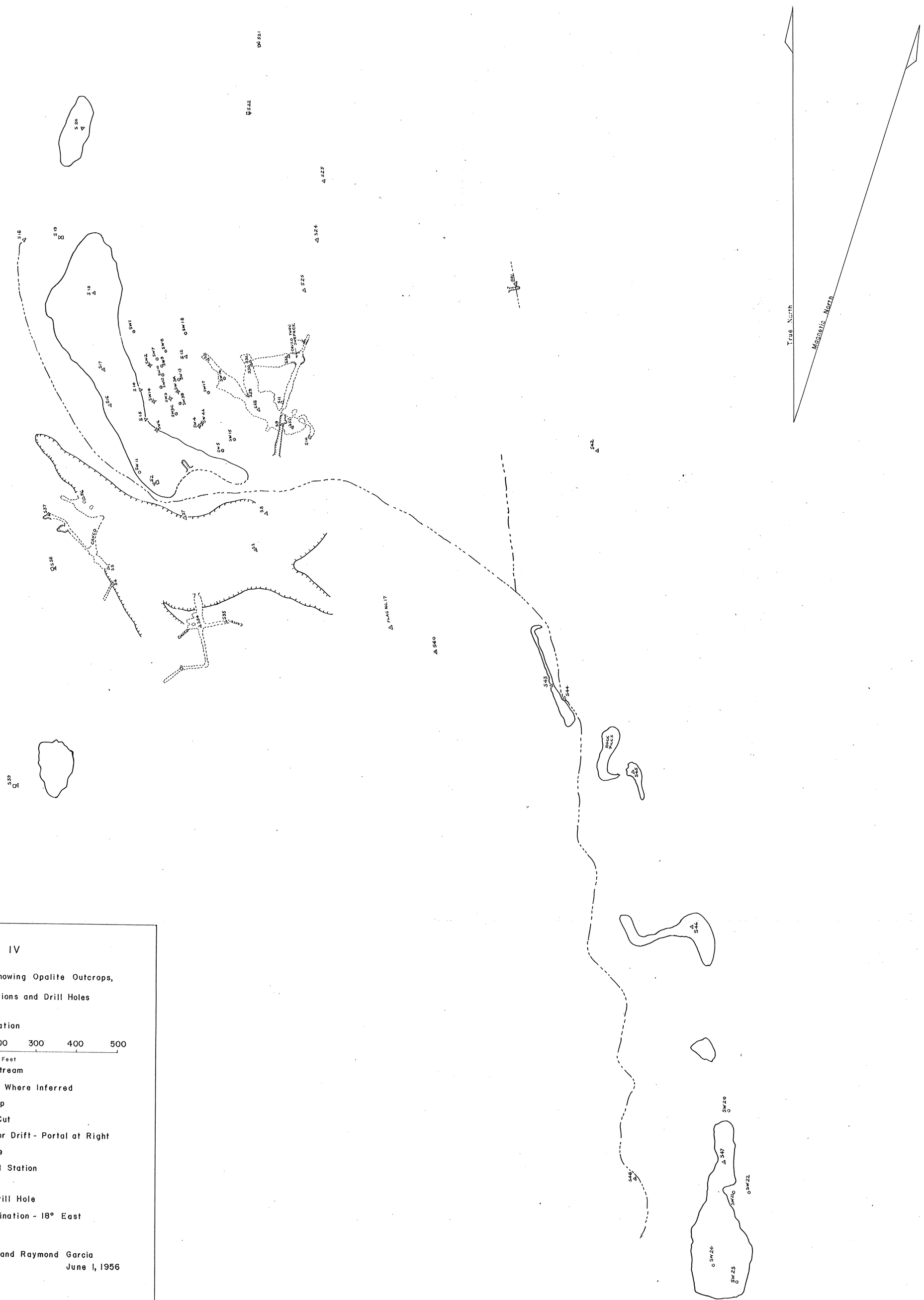


PLATE IV

Silver Cloud Mine Area Showing Opalite Outcrops, Mine Workings Survey Stations and Drill Holes

Explanation

100 50 0 100 200 300 400 500

Scale in Feet

- Intermittent Stream
- Fault - Dashed Where Inferred
- Opalite Outcrop
- Open Pit or Cut
- Haulage Way or Drift - Portal at Right
- Shaft or Winze
- Survey Control Station
- Drill Hole
- Mineralized Drill Hole
- Magnetic Declination - 18° East

Geology by Leo J. Miller and Raymond Garcia
Drawn by L. Straub June 1, 1956

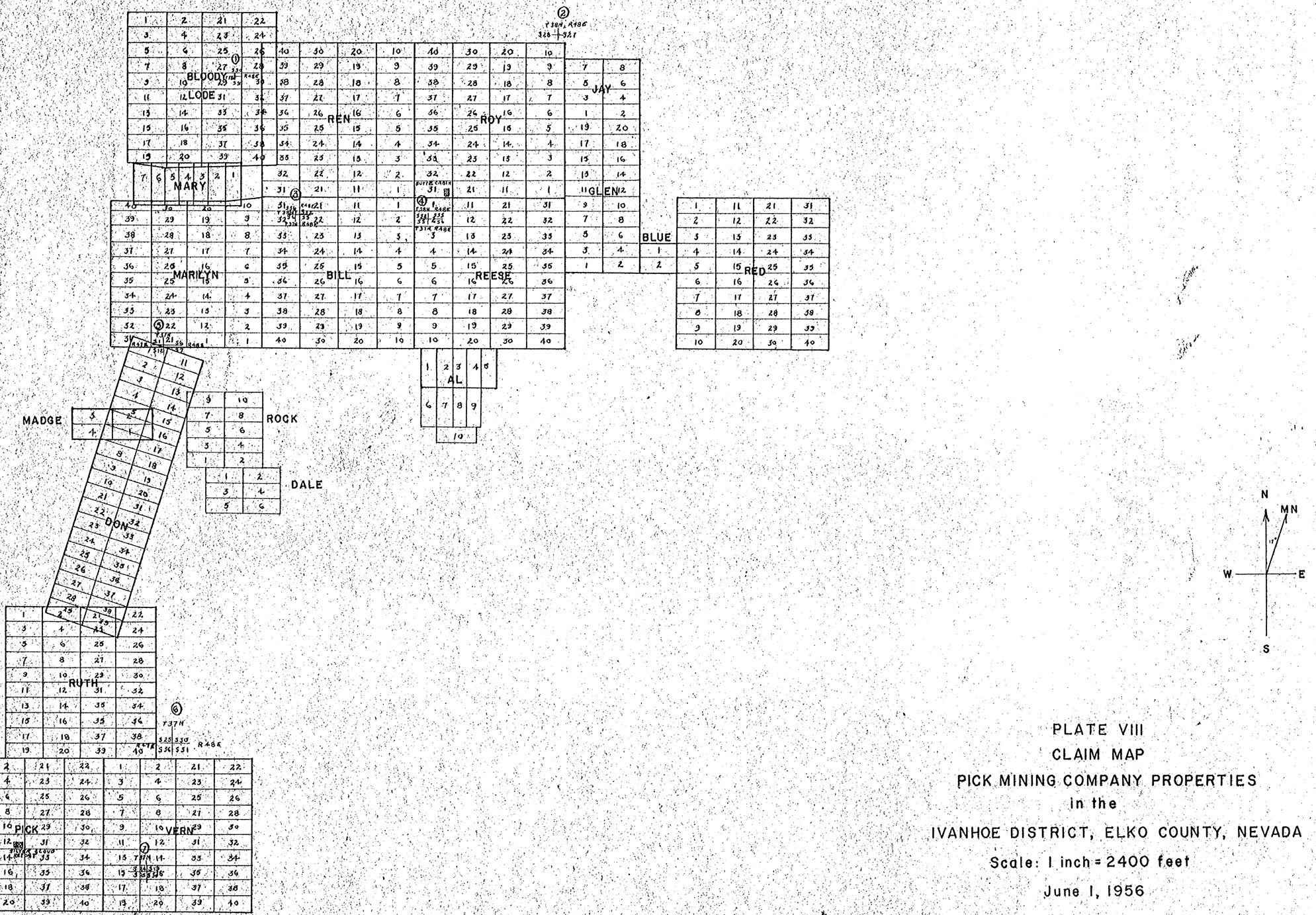


PLATE VIII

CLAIM MAP

PICK MINING COMPANY PROPERTIES

in the

IVANHOE DISTRICT, ELKO COUNTY, NEVADA

Scale: 1 inch = 2400 feet

June 1, 1956

PLATE V A

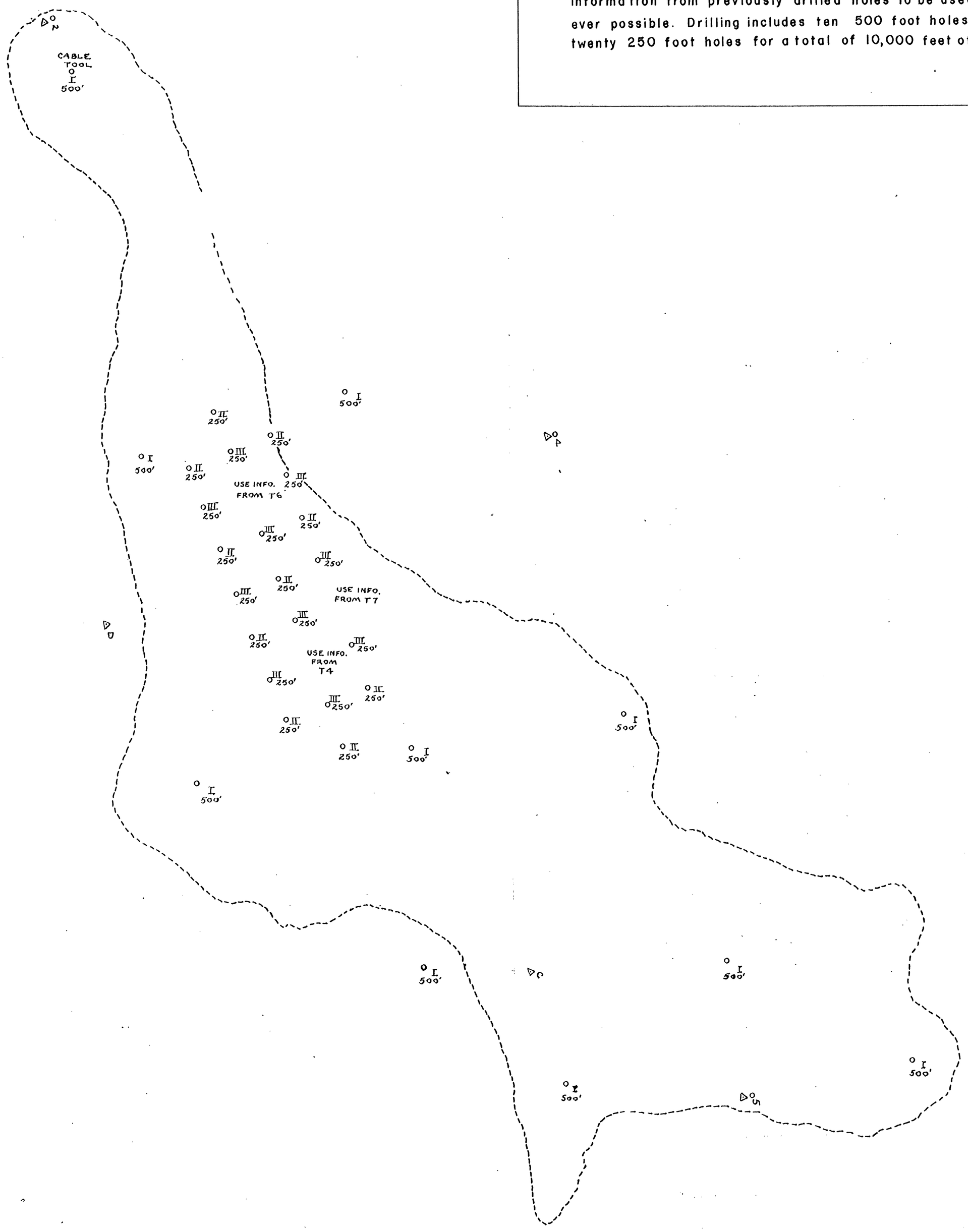
Overlay Showing Proposed Locations of Holes to be Drilled in Any Future Exploration Program

100 50 0 100 200 300 400 500

scale in feet

Explanation

All holes are to be cored with rotary diamond drills except where otherwise noted. Roman numerals indicate phase order of drilling. Arabic numbers indicate maximum drill depth. Information from previously drilled holes to be used where ever possible. Drilling includes ten 500 foot holes and twenty 250 foot holes for a total of 10,000 feet of drilling.



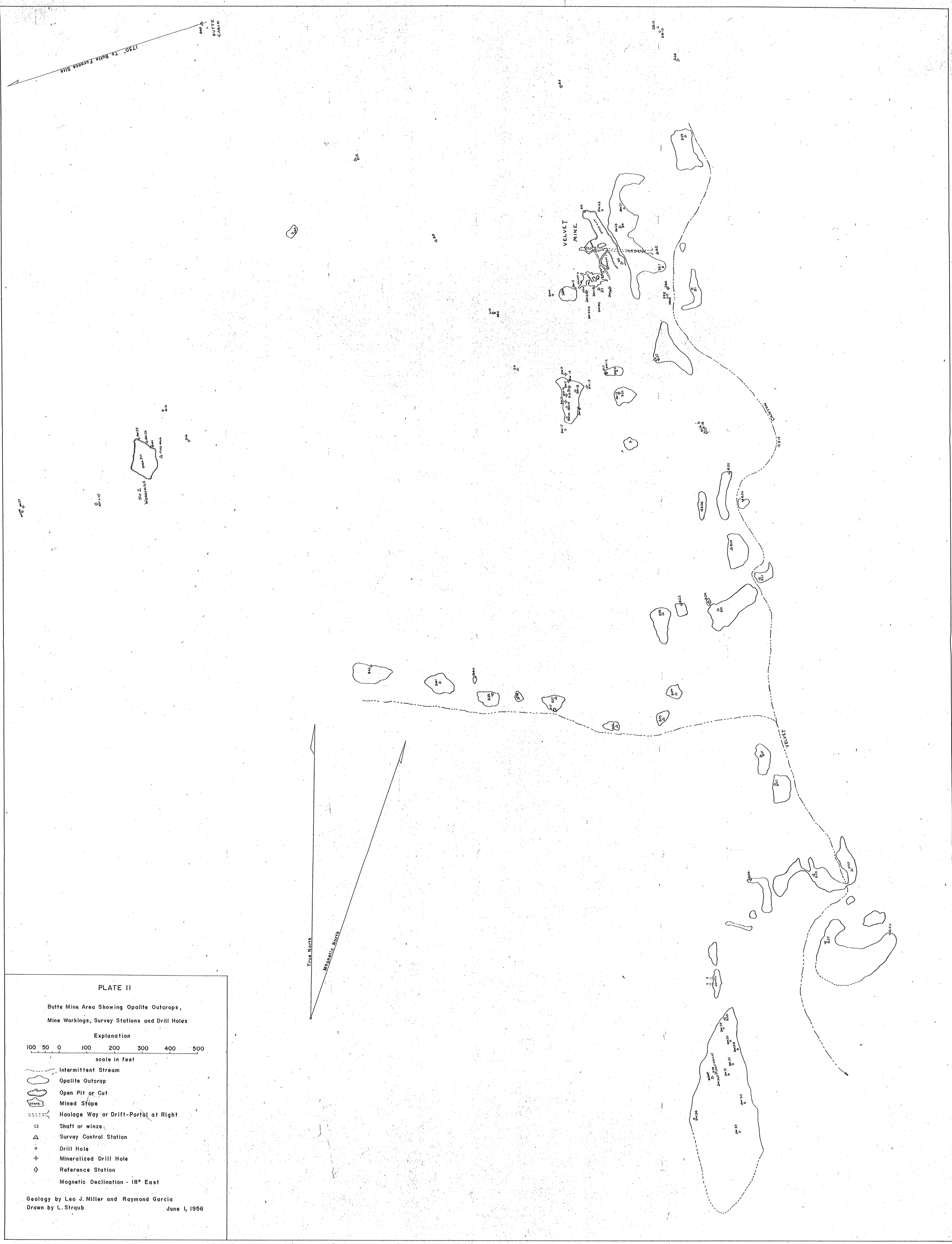


PLATE II

Butte Mine Area Showing Opalite Outcrops,

Mine Workings, Survey Stations and Drill Holes

Explanation

100 50 0 100 200 300 400 500

scale in feet

- Intermittent Stream
- Opalite Outcrop
- Open Pit or Cut
- Mined Stope
- Haulage Way or Drift-Portal at Right
- Shaft or winze
- Survey Control Station
- Drill Hole
- Mineralized Drill Hole
- Reference Station
- Magnetic Declination - 18° East

Geology by Leo J. Miller and Raymond Garcia

Drawn by L. Straub June 1, 1956

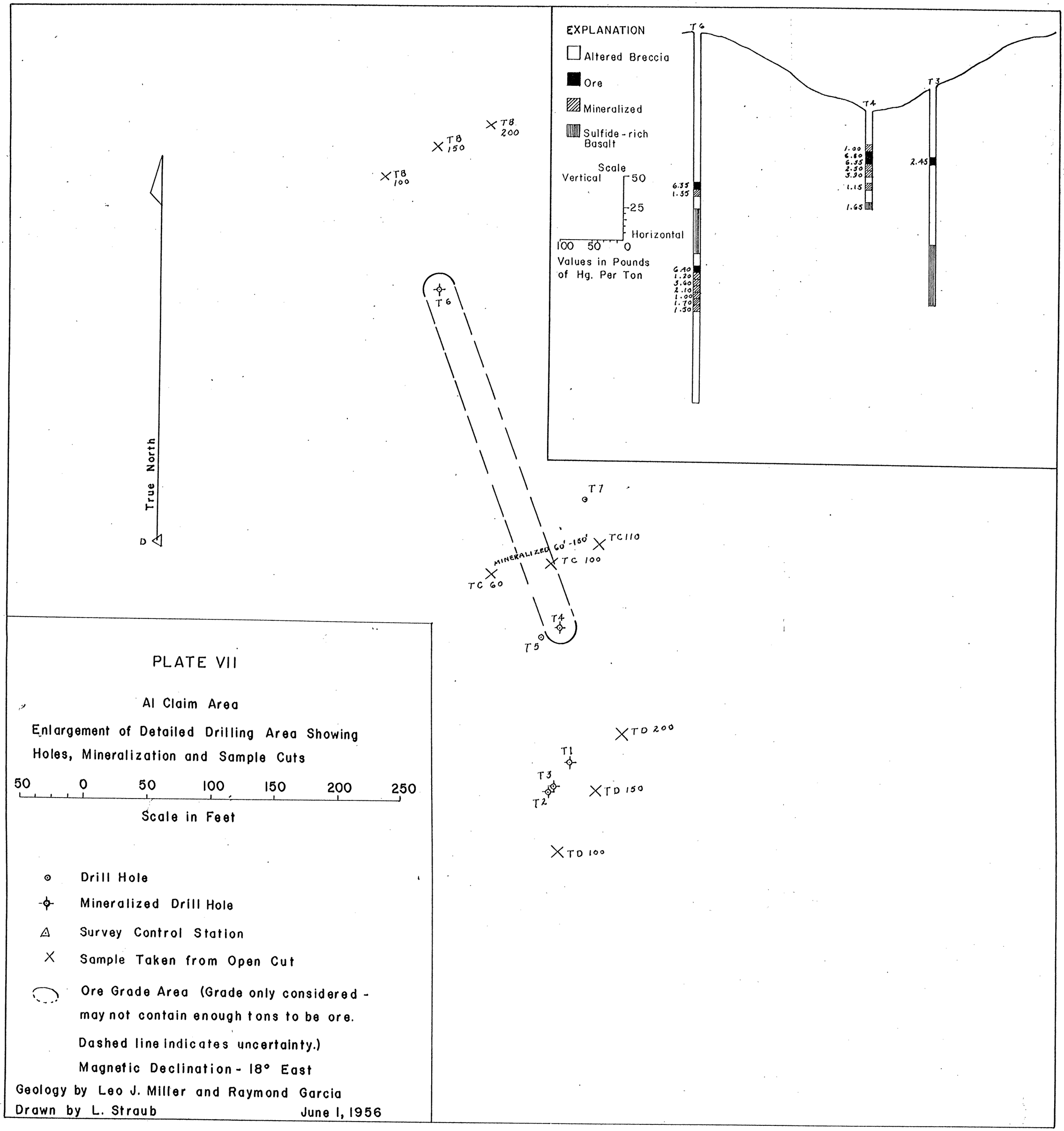


PLATE VII

Al Claim Area

Enlargement of Detailed Drilling Area Showing Holes, Mineralization and Sample Cuts

50 0 50 100 150 200 250

Scale in Feet

⊙ Drill Hole

⊕ Mineralized Drill Hole

△ Survey Control Station

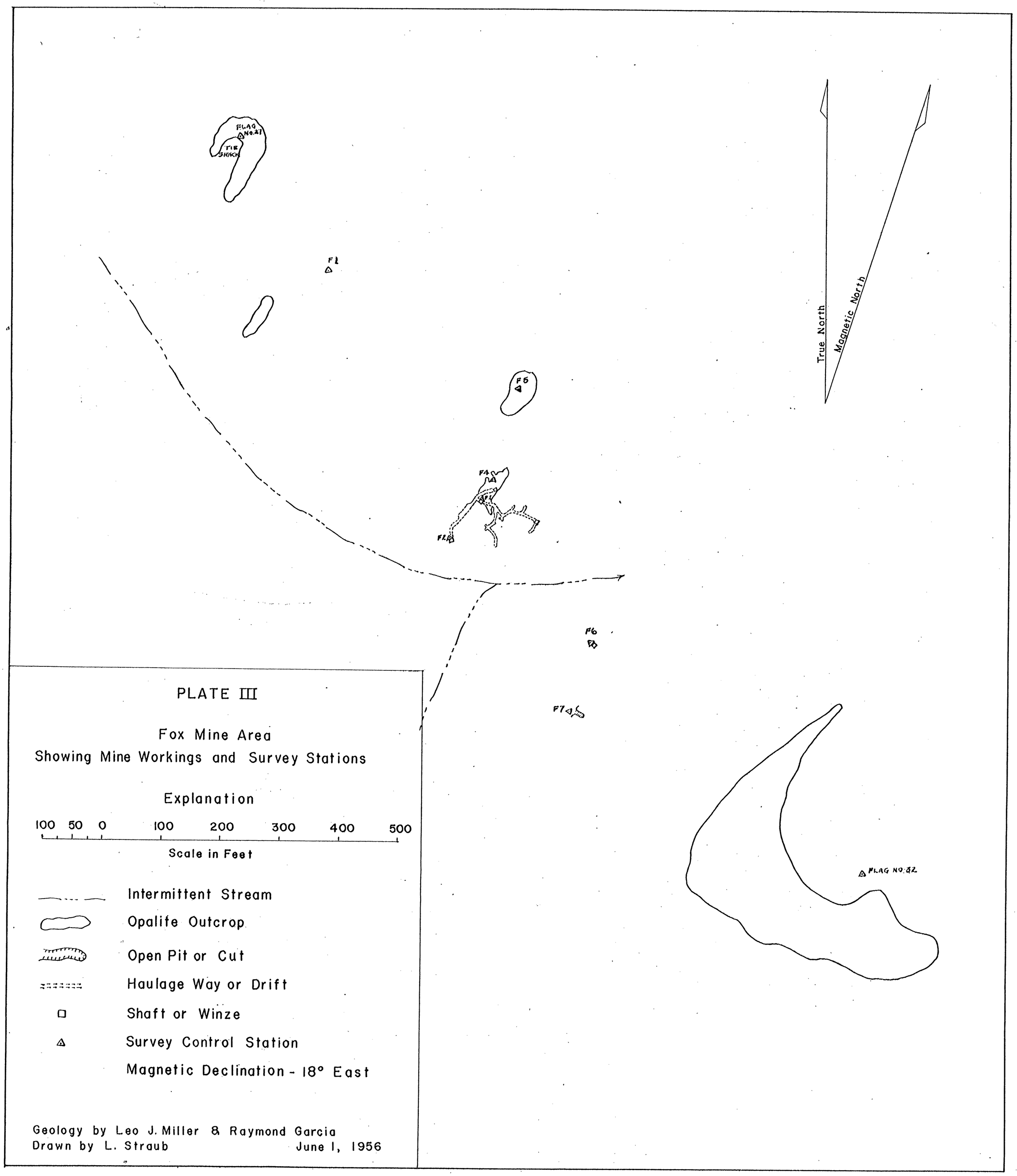
× Sample Taken from Open Cut

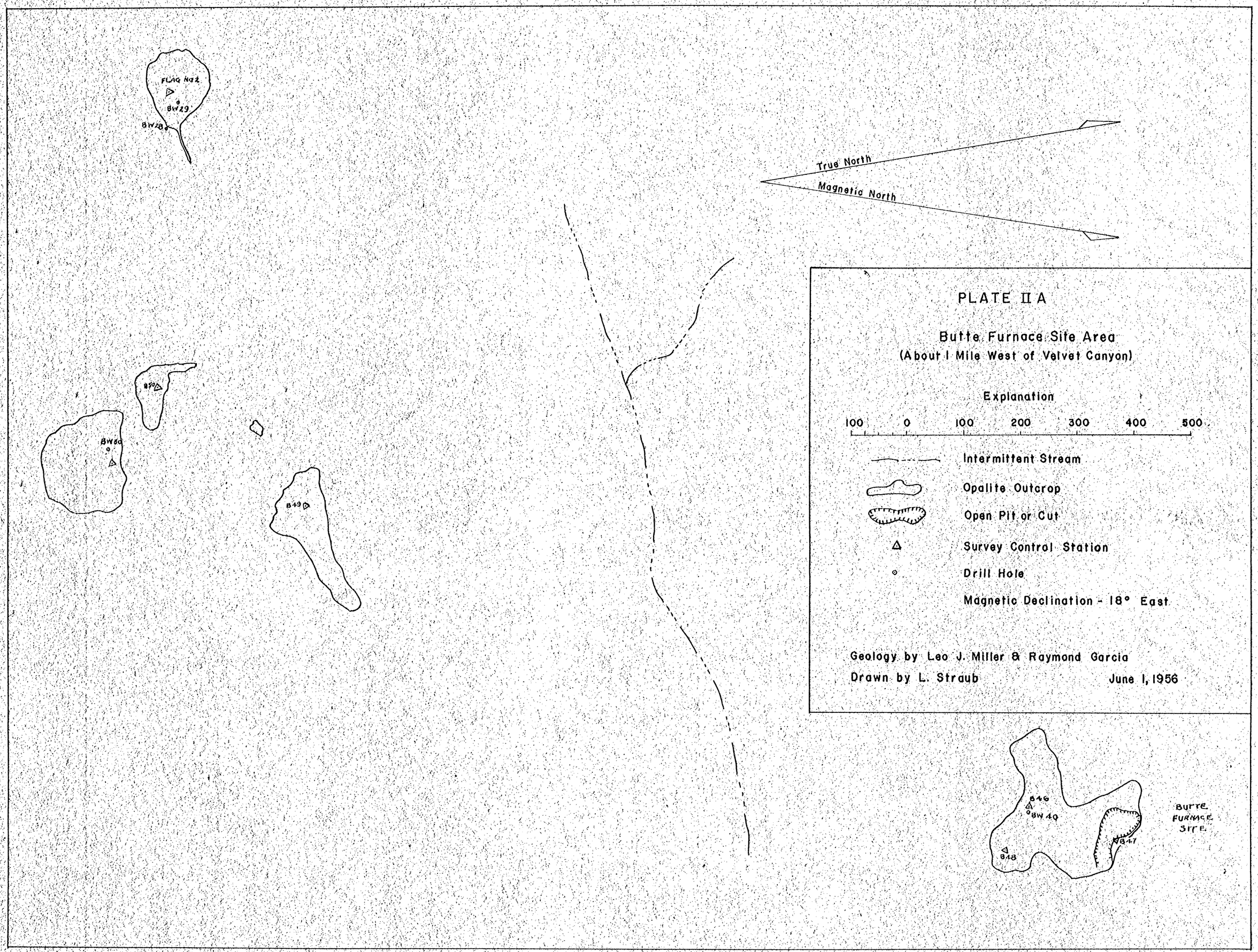
Ore Grade Area (Grade only considered - may not contain enough tons to be ore. Dashed line indicates uncertainty.)

Magnetic Declination - 18° East

Geology by Leo J. Miller and Raymond Garcia

Drawn by L. Straub June 1, 1956


FLAG No.27
TIE SHACK
F1
F5
F4
F2
F3
F6
F7
True North
Magnetic North
FLAG NO.32
PLATE III
Fox Mine Area
Showing Mine Workings and Survey Stations
Explanation
100 50 0 100 200 300 400 500
Scale in Feet
Intermittent Stream
Opalite Outcrop
Open Pit or Cut
Haulage Way or Drift
Shaft or Winze
Survey Control Station
Magnetic Declination - 18° East
Geology by Leo J. Miller & Raymond Garcia
Drawn by L. Straub
June 1, 1956


FLAG NO 2
BW29
BW28
True North
Magnetic North
BW60
B50
B49
PLATE II A
Butte Furnace Site Area
(About 1 Mile West of Velvet Canyon)
Explanation
100 0 100 200 300 400 500
Intermittent Stream
Opalite Outcrop
Open Pit or Cut
Survey Control Station
Drill Hole
Magnetic Declination - 18° East
Geology by Leo J. Miller & Raymond Garcia
Drawn by L. Straub
June 1, 1956
B46
BW 40
B48
B47
BUTTE FURNACE SITE

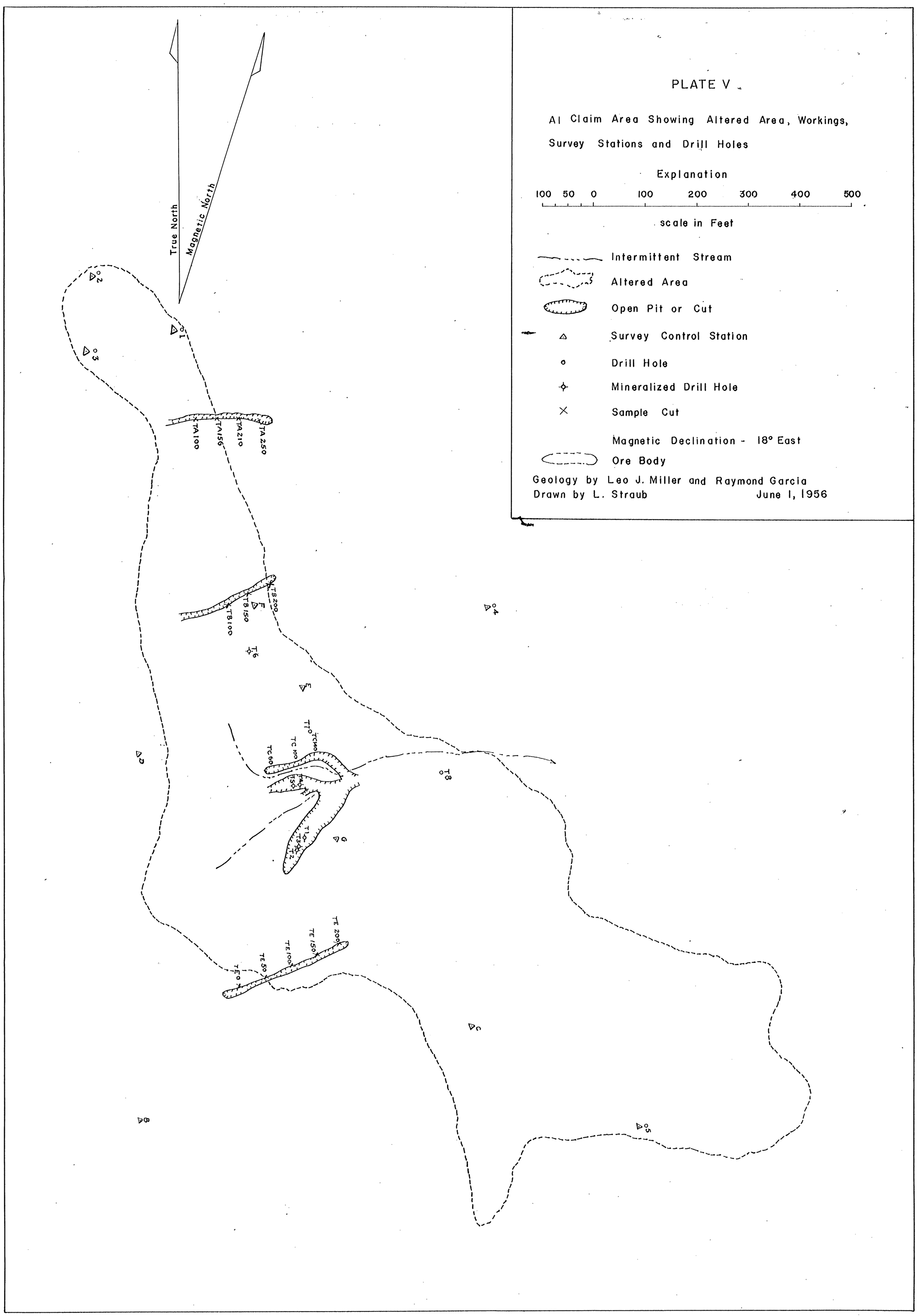


PLATE V
A1 Claim Area Showing Altered Area, Workings, Survey Stations and Drill Holes
Explanation
100 50 0 100 200 300 400 500
scale in Feet
Intermittent Stream
Altered Area
Open Pit or Cut
Survey Control Station
Drill Hole
Mineralized Drill Hole
Sample Cut
Magnetic Declination - 18° East
Ore Body
Geology by Leo J. Miller and Raymond Garcia
Drawn by L. Straub June 1, 1956
True North
Magnetic North
TA 100
TA 156
TA 210
TA 250
TB 100
TB 150
TB 200
TC 60
TC 100
TC 140
TE 0
TE 50
TE 100
TE 150
TE 200
A
B
C
D
E
F
G

PLATE VI

Butte & Silver Cloud Areas

Enlargement of Detailed Drilling Areas Showing Holes, Mineralization and Surrounding Conditions

25 0 25 50 75 100 125

scale in feet

Drill Hole

Mineralized Drill Hole

Survey Control Station

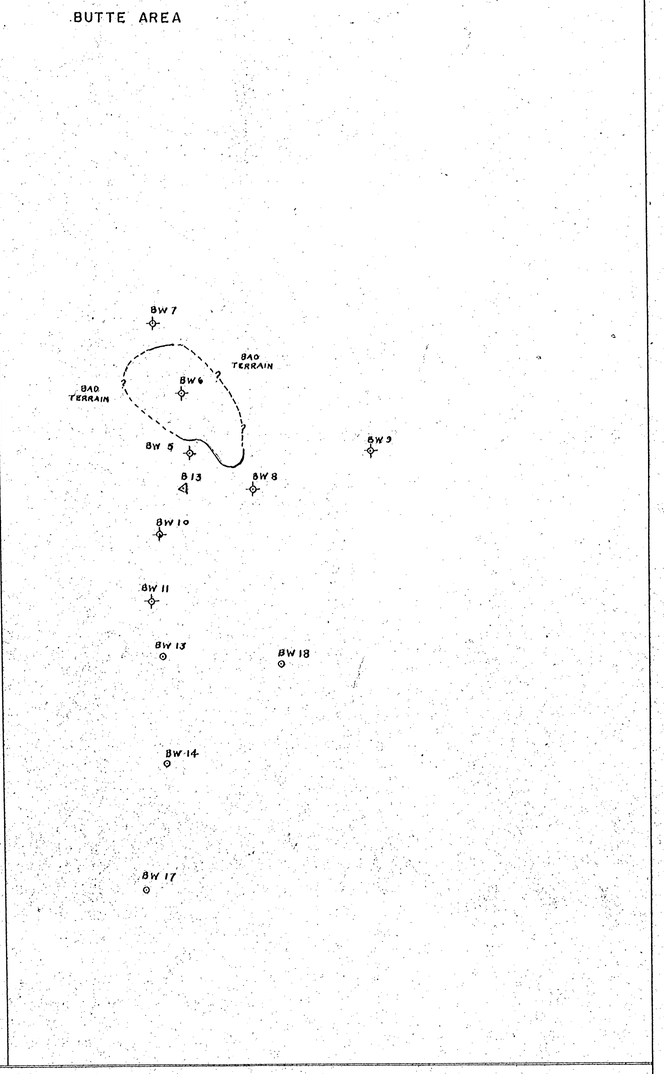
Ore Grade Area (grade only considered - may not contain enough tons to be ore. Dashed line indicates uncertainty.)

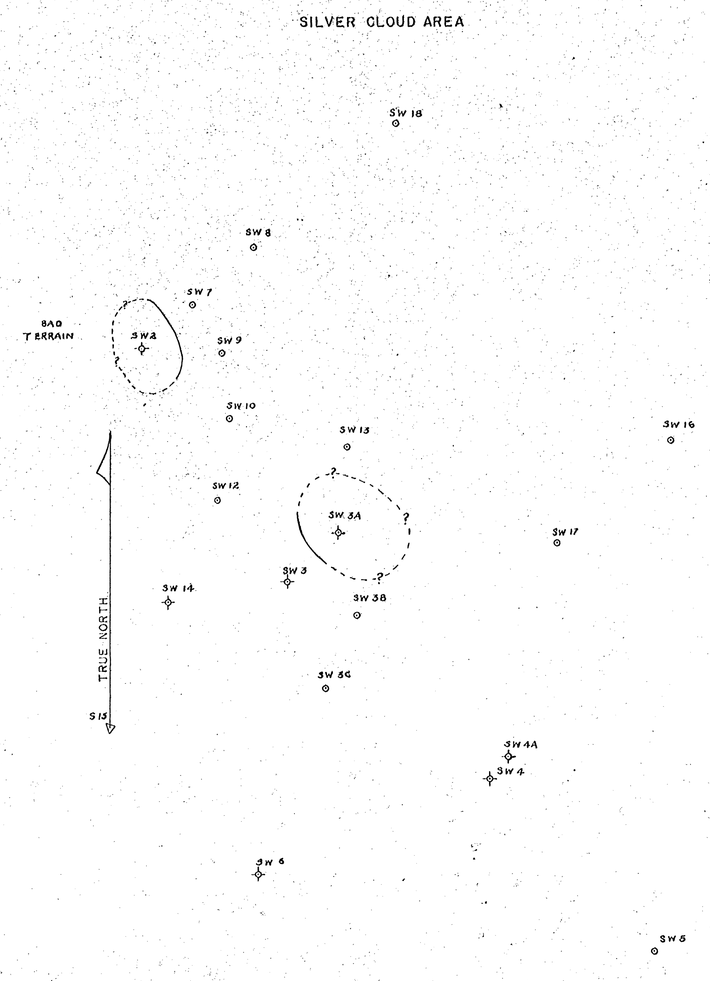
Note: Areas marked "Bad Terrain" indicate spots where placement of drill was unfeasible. Holes BW 7, SW 3 and SW 13 could not be drilled to sufficient depth to determine extent of mineralization in BW 6 and SW 3A respectively.

Magnetic Declination - 18° East

Geology by Leo J. Miller and Raymond Garcia

Drawn by L. Straub June 1, 1956

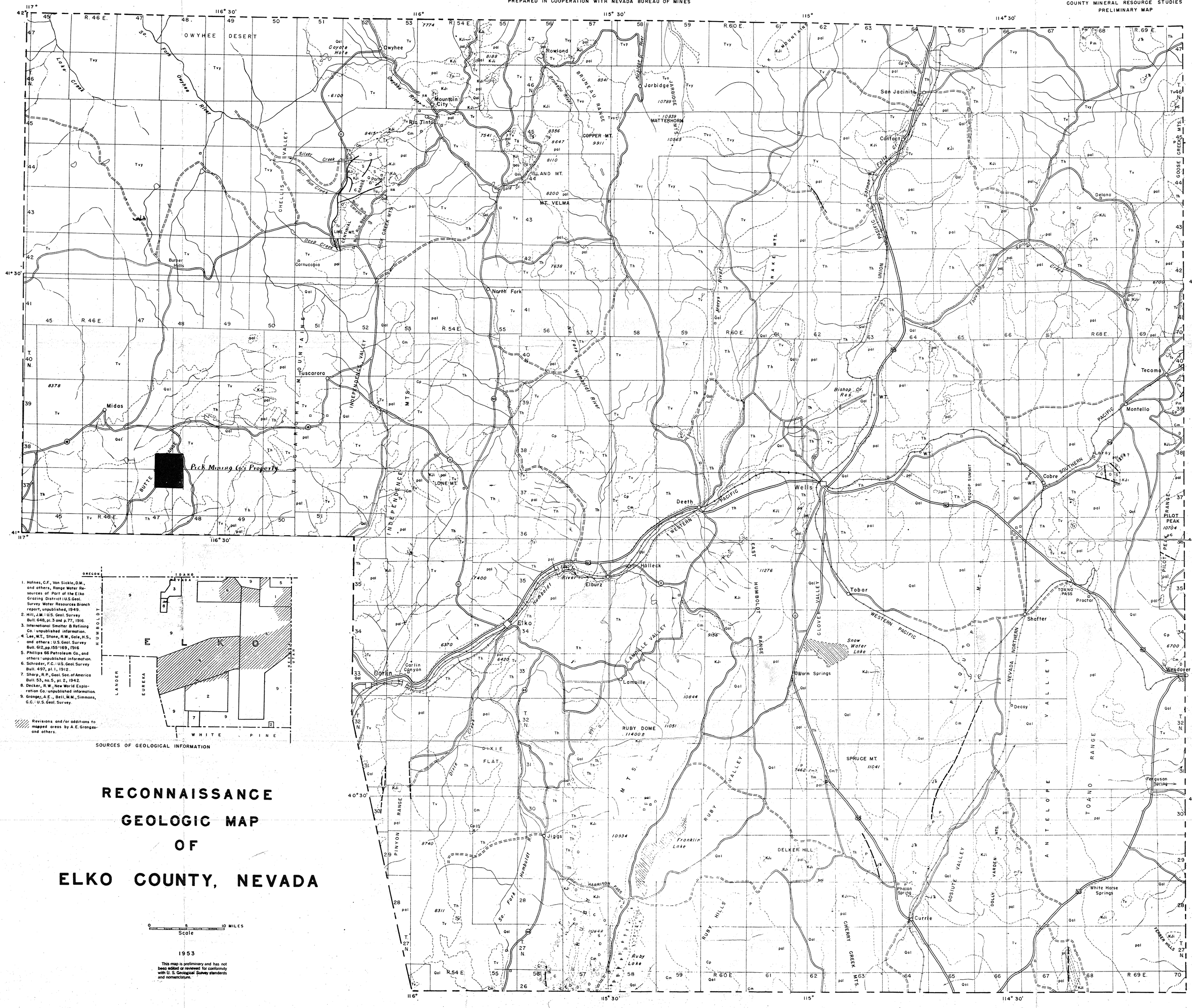




U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH NEVADA BUREAU OF MINES

COUNTY MINERAL RESOURCE STUDIES
PRELIMINARY MAP



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9. Granger, A.E., Bell, M.M., Simmons, G.C.: U.S. Geol. Survey.

Revisions and/or additions to mapped areas by A.E. Granger and others.

SOURCES OF GEOLOGICAL INFORMATION

RECONNAISSANCE GEOLOGIC MAP OF ELKO COUNTY, NEVADA

0 5 10 MILES
Scale

1953

This map is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

LEGEND FOR ELKO COUNTY

EXPLANATION

SEDIMENTARY ROCKS

Qal — Alluvial Deposits
(Includes unconsolidated and poorly consolidated sand, silt, and gravels. Mainly in alluvial fans, flood plains, etc.; intermontane basins included where bedrock is masked.) — QUATERNARY

Tg — Terrace gravels
(Pliocene (?) and Pleistocene terrace gravels in the Gold Creek area.)

Th — Humboldt formation (Miocene) and associated strata
(Moderately to poorly consolidated lake deposits of limestone, shale, oil shale, coarse fanglomerate, conglomerate, and interbedded pyroclastic beds. Includes stream-laid conglomerates and gravels of Pleistocene age.) — TERTIARY

JTr — Jurassic and Triassic rocks
(Triassic Woodside (?) shale and Thaynes (?) limestone; Jurassic Dunkel (?) sandstone; and other units. Mainly black shales in extreme northeast, and red sandstones in southeast part of country.) — JURASSIC TRIASSIC

P — Permian rocks
(Phosphoria formation and other units.) — PERMIAN

Cp — Pennsylvanian rocks
(Ely limestone, Weber(?) quartzite, Wells(?) formations, and other units. Mainly alternating limestone and quartzites.) — PENNSYLVANIAN

Cm — Mississippian rocks
(White Pine shale, Diamond Peak quartzite, and other units. Mainly shallow marine deposits.) — MISSISSIPPIAN

C — Undifferentiated Pennsylvanian and Mississippian rocks

pzl — Undifferentiated Paleozoic rocks
Localities where system is known. Areas within boundaries have not been mapped are indicated by appropriate letter symbol. Shown by X where closely located.

D — Devonian rocks
(Devils Gate formation, Nevada limestone, and other units.) — DEVONIAN

S — Silurian rocks
(Lone Mountain limestone. The lower part of the Lone Mountain limestone is of Upper Ordovician age.) — SILURIAN

O — Ordovician rocks
(Pogonip limestone, Vinini(?) shale, and Eureka quartzite.) — ORDOVICIAN

Є — Cambrian rocks
(Prospect Mountain quartzite, Brigham quartzite, and other units. Mainly quartzite with some limestone and shale.) — CAMBRIAN

METAMORPHIC ROCKS

pЄ — Pre-Cambrian rocks
(Undifferentiated pre-Cambrian metamorphic rocks near the eastern margin of the county. Some of the metamorphic rocks in the Ruby and East Humboldt Ranges possibly belong in this classification.) — PRE-CAMBRIAN

IGNEOUS ROCKS

Tvy — Younger Volcanic rocks
(Mainly basalt, andesite, and rhyolite flows; younger than the Humboldt formation.) — TERTIARY

Tvo — Older volcanic rocks
(Mainly rhyolite flows and welded tuffs; older than the Humboldt formation.)

Tv — Undifferentiated Tertiary volcanic rocks
(Flows and interbedded pyroclastic beds; mainly rhyolites, andesites, basalts, and welded tuffs.)

KJi — Cretaceous and Jurassic intrusive rocks
(Mostly monzonite, granodiorite, and granite; generally considered to be of Jurassic and Cretaceous age, and possibly Eocene. Included metamorphic rocks of Paleozoic and possibly pre-Cambrian age in the northern Ruby and East Humboldt Ranges.) — CRETACEOUS JURASSIC

Contact, approximately located

Fault
Dashed where approximately located

Generalized strike and direction of dip of beds

Base map compiled by the U. S. Geological Survey from U. S. Coast and Geodetic Survey Sectional Charts and U. S. Geological Survey, Nevada outline map.

Nevada State Highway

U.S. Federal Highway

This map is preliminary and has not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.