UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
WASHINGTON 25, D. C.

MAR 15 1960

Memorandum

To: Executive Officer, OME Field Team, Region II

From: Chairman, Operating Committee, OME

Subject: Docket No. OME-6033 (Fluorspar)
L. and G. Mining Company
Chicago Lode and Allied Group
Nye County, Nevada
Contract No. OME-2101

We have reviewed the correspondence between you and the subject Operator relating to the subject contract which was executed July 8, 1959.

As contract obligations cannot be carried on the accounts for an indefinite period, the Field Team should advise the Operator that, unless title to the Allied Group of claims is settled and the Operator is able to start work within 60 days from the date of the Field Team's letter, the contract will have to be rescinded. Such rescission will be without prejudice to the execution of a new contract upon title settlement and indication of the Operator's ability to start the work.

The Operator also should be advised that, if work can be started within the 60 days, in addition to changing the dates in Article 1(a) for beginning and completing the work, the interest rate in Article 1(c) must also be changed to that in effect on the date of the amendment.

George C. Selfridge

APPROVED:

P. F. Yopes

Member, Bureau of Mines

W. P. Williams

Member, Geological Survey

FMMurphy/EDTalbert/gla/kb - 3-15-1960
cc to: Director's reading file
Operating Committee
R. B. McDougas, USBM
Harold Kirkemo, USGS
Docket
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

OFFICE OF MINERALS EXPLORATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION II

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DATE	INITIALS	CODE

APPLICATION REPORT

OME-6022 (Fluorspar)
L. & G. Mining Company
Chicago Lode & Allied 1-7 Lode Claims
Nye County, Nevada

by

B. N. Sheahan
U. S. Bureau of Mines

H. M. Stager
U. S. Geol. Survey

June 12, 1959

Reviewed by
OME OPERATING COMMITTEE

_____
(date)

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INTRODUCTION

The L. and G. Mining Company, Box 2, Gabbs, Nevada, applied to the Office of Minerals Exploration, for Government assistance in a program to explore for fluorspar at the Chicago Lode and Allied 1-7 Lode Claims, Union Mining District, Nye County, Nevada. The applicant wishes to explore the deposit to determine if sufficient reserves can be assured to justify development, mill construction, and open-pit mining operations.

A field examination was requested by the Operating Committee and was made by B. H. Sheahan, U. S. Bureau of Mines, and H. K. Stager, U. S. Geological Survey, on April 15, 1959, accompanied by Bernard York, consulting mining engineer representing the applicant.

The applicant's maps, attached to the application, and existing State and Federal publications[1/] describing the area were carefully studied and were compared with geologic exposures on the surface and in shallow surface cuts and workings. Fifteen samples were taken by the engineer and assayed by the U. S. Bureau of Mines.

1/ Kral, Victor E., 1951, Mineral Resources of Nye County, Nevada, Univ. of Nevada Bull., v. 45, no. 3, p. 203.
Ferguson, Henry G., and Muller, Siemon W., 1949, Structural Geology of the Hawthorne and Tonopah quadrangles, Nevada, U. S. Geol. Survey Prof. Paper 216.

SUMMARY

The deposit consists of fluorspar-rich ore shoots localized along fracture zones in silicified dolomite and limestone on the east slope of Granteville ridge. Reserves are 190,000 tons of indicated and inferred ore that averages about 35 percent CaF_2. The ore can probably be milled to yield acid grade fluorspar. The applicant proposed to explore the deposit by driving 6 crosscut adits and drifts totaling 1,460 feet, with 140 feet of open cuts for portal preparation and 1,050 feet of access roads. The potential of the deposit can be adequately tested by a less extensive program and the examiners have recommended a project consisting of about half the work proposed by the applicant.

CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the Government enter into an OME contract with the L. and G. Mining Company to provide 50 percent of the costs of the revised program consisting of three adits having an aggregate length of 720 feet plus 85 feet of open cut portal preparation and 800 feet of access roads. Total cost is estimated to be $26,041.90 of which the Government's share would be $13,020.85. To facilitate administration of the contract the work should be based on unit costs insofar as possible.

LOCATION, ACCESSIBILITY AND LOCAL FACILITIES

The claims are in the Shoshone Range on the east slope of Granteville Ridge at an altitude of 7,300 to 7,700 feet, in Sec. 10, T. 11 N, R. 39 E. M. D. B. & M., Union Mining District, Nye County, Nevada (Fig. 1).

The property is accessible by way of dirt roads from either Gabbs, Ione, or Tonopah, Nevada. To reach the property from the U. S. Post Office, Gabbs, Nevada, travel 23.5 miles easterly by way of improved dirt road through Brunton Pass and across Ione valley to Grantsville, Nevada. Follow narrow dirt road 1.5 miles southerly to the property. The road is passable, when dry, with a passenger car, and the drive from Gabbs usually requires 45 minutes.

Climate	Precipitation averages 10 inches per year, most of which falls as snow.
Timber	Pinon Pine and Juniper
Water	1 mile to spring and well
Work Season	8 months - April through November
Electric Power	Gabbs, Nevada-California Electric Power Co.
Assay Office	Gabbs, Nevada
Supplies	Gabbs, Nevada; Fallon, Nevada 110 miles
Railroad	Luning, Nevada - 56 miles
Freight rates	via truck to Luning, $0.07 per ton mile; via railroad from Luning to San Francisco, $8.00 to $12.00 per ton depending on value
Telephone	Gabbs, Nevada

THE PROPERTY

History and Production:

The Chicago lode claim was located and patented in the 1880's when Grantsville was an active boom silver-lead mining camp. Fluorspar was found in the district during this early period but it was of slight interest until the late 1930's.

In 1938, N. M. Berryman purchased the Chicago lode patented claim and several other patented claims in the district from Nye County by paying delinquent taxes. In 1941, Roy C. Ames located the Allied group of seven claims over and around the Chicago lode. That year he mined 29 tons of acid grade fluorspar. Jim Corlett, a mine lessee from Gabbs, Nevada, mined about 100 tons of acid grade fluorspar from the deposit in 1948. The material was selectively mined and the product was hand-sorted.

Lindsay and Gordon Smith, business men of Gabbs, Nevada, leased and purchased this property and several other fluorspar properties in the district late in 1958. Preliminary exploration was done on several of the deposits early in 1959. This work was supervised by Bernard York, consulting mining engineer of Mina, Nevada. Expenditures, including property acquisition and exploration expenses, amounted to approximately $40,000. The exploration work was done efficiently by experienced workmen.

Ownership:

The property consists of eight lode mining claims in a contiguous group, covering an area of approximately 140 acres. One of the claims, the Chicago lode, is a patented claim and was recently purchased by Lindsay and Gordon Smith. The other seven claims, Allied 1-7, are unpatented and are held by a purchase contract from Roy C. Ames, of Ione, Nevada. A map showing the claims is attached to the application. Copies of deeds and conveyances are included with the application docket. A list of these claims follows:

	Recorded in Tonopah, Nevada	
Name of Claim	Page	Book
Allied No. 1	248	104
Allied No. 2	248	104
Allied No. 3	249	104

Allied No. 4	250	104
Allied No. 5	250	104
Allied No. 6	251	104
Allied No. 7	252	104
Chicago Lode	U. S. Mineral Survey No. 1272-30	

The L. & G. Mining Company is a partnership of Lindsay Smith, Gordon Smith, and I. J. McCullough. Each partner holds a one-third interest in the company.

Financial Eligibility:

The applicant has submitted evidence of efforts made to secure a loan for exploration purposes from two sources. Copies of letters, dated April 1, 1959, in reply to their request, are attached to the GME application. These letters are from (1) The Security National Bank of Reno, Mineral County Branch, Babbit, Nevada; (2) First National Bank of Nevada, A. B. Andrews, Assistant Cashier. Both banking institutions have suggested that the loan be obtained from some other source.

Lindsay Smith and Gordon Smith own several business enterprises and properties at Gabbs and Hawthorne, Nevada.

Development:

There are only a few shallow development workings on the claims. An incline shaft, size 4' x 6', was sunk to a depth of about 50 feet on the Chicago claim in search of silver ore during the early period of activity. The shaft is now inaccessible.

The fluorspar deposits are developed by a few shallow trenches, open cuts, and an adit crosscut 80 feet in length. Total volume of open cut excavations amounts to about 600 cubic yards. The deposit has recently been

explored with 51 vertical wagon drill holes to an average depth of 44 feet. A combination gravity and floatation mill, that could be adapted to treat the ore, is available in Gabbs and will be utilized if sufficient ore is not found to warrant construction of a mill at the property or in nearby Grantsville. There are two small storage sheds on the property. The nearest housing facilities suitable to accommodate an exploration crew are at Gabbs, Nevada.

Equipment owned by the applicant and available for use on an exploration project is listed as follows:

Quantity	Item	Present value
1	Air compressor - 315 cfm.	$5,000.00
2	Pneumatic rock drills and accessories	1,200.00
1	Tugger - double drum hoist - air	1,200.00
1	Scraper bucket	300.00
4	Snatch blocks	100.00
300 ft.	Cable 7/16 - 5/8 inch	50.00
1000 ft.	Mine rail 12 lb/yd.	200.00
80 ft.	Mine rail 20 lb/yd.	27.00
500 ft.	Iron pipe - 2 inch dia., G. I.	350.00
500 ft.	Iron pipe - 3/4 inch dia., G. I.	125.00
500 ft.	Ventilation pipe - metal - 8" dia.	350.00
1	Fan-with gasoline - 1 1/2 hp eng.	300.00
2	Mine cars - 1 ton	200.00
1	Mucking machine	1,500.00
1	Pickup truck - nearly new 3/4 Ton	2,400.00
1	Tractor - TD-9 with loader	9,000.00*

1	Tractor - D-6 with dozer blade	7,500.00
1	Truck - 2 ton, flat bed with water tank	2,400.00*
1	Water pressure tank - air	100.00
1	Rock bit grinder	100.00
1	Electric light plant 750 watt	700.00
1	Miscellaneous small tools, etc.	300.00
	Present value of operating equipment	$22,002.00

* Available, but not intended for use on exploration project, and not included in total estimated present value.

GEOLOGY

Geologic Setting:

The claims are on the east slope of Grantsville Ridge in an area of moderate relief. The oldest rocks exposed in the area are dolomite and limestone of the Luning formation of Upper Triassic age. These rocks are part of a thrust plate that has been thrust over shales and limestones of the Upper Triassic Gabbs formation and the Lower Jurassic Sunrise formation by the pre-Tertiary Shoshone thrust fault. Along the east base of the ridge, and along the top of the ridge in the south part of the area, the sedimentary rocks are intruded or covered by volcanic rocks of Tertiary age.

The rocks of the Luning formation consist of massive gray dolomite and minor amounts of dark gray limestone. The thickness of these rocks have not been determined but exceeds 3,000 feet. At least part of the dolomite is considered by Ferguson and Muller to be secondary in origin, and is the result of dolomitization of limestone along the underlying thrust fault. In the claim area the beds strike north, are overturned, and dip 50° to 70° east. The Luning formation rocks have been thrust over the younger thin-bedded limestones and shales of the Gabbs and Sunrise formations. These younger sedimentary rocks are not exposed in the claim area but are exposed about one mile to the southwest in Milton Canyon. The Gabbs formation is about 400 feet thick and the Sunrise formation is about 1,200 feet thick. The volcanic rocks consist of flows and small intrusive plugs of andesite and rhyolite. The rhyolite exposed in the claim area is porphyritic and contains prominent phenocrysts of feldspar.

A major fracture zone, several hundred feet wide and several miles long, cuts the dolomite and limestone of the Luning formation through the middle of the claim area. It strikes about north and is vertical or dips steeply east. The dolomite and limestone has been intensely silicified along this zone and prominent masses of the silicified material, resistant to erosion, crop out along the strike of the zone. It is within this fracture zone, and intimately associated with the silicified rocks, that the fluorspar deposits occur.

Ore Deposits:

The deposits are of hydrothermal origin and consist of ore shoots of fluorspar-rich brecciated and silicified carbonate rocks of the Luning formation along fracture zones in the Shoshone thrust plate.

Fluorite is the only ore mineral and occurs chiefly as botryoidal masses that fill cavities between breccia fragments or coat fracture surfaces within the silicified zone. The fluorite content ranges from a few percent to as much as 98.3 percent and averages about 35 percent in the ore bodies. Gangue minerals are calcite, secondary silica, unreplaced dolomite, and traces of pyrite. Field evidence indicates that the fluorite was deposited after the carbonate rocks were fractured, silicified, and fractured again, as nearly all of the fluorite occurs as surface coatings on the silicified material in open voids that are commonly several inches to several feet in diameter. Assays of the fluorite indicate less than 0.1 percent contained silica. Locally the carbonate rocks have been replaced by fluorite but this material makes up only a small part of the ore.

The 129 tons of ore that has been shipped from the property was mined from high-grade fluorspar exposed on the Chicago Lode and the Allied Nos. 6 and 7 claims and was hand-sorted to yield acid grade (97% CaF_2) material. The size of these ore bodies is not known but surface exposures in outcrops, shallow pits and drill holes, indicate that they range in size from small pods a few feet in diameter and containing a few hundred pounds of ore to large masses several hundred feet long, about 100 feet wide, extending down dip at least 50 feet and probably containing about 100,000 tons of ore. The attempts to more adequately determine their size and grade by drilling have not been successful because of the fractured, hard siliceous and cavernous nature of the host rocks. The proposed project is intended to yield this type of information and permit a more accurate appraisal of their tonnage and grade.

Sampling:

Fifteen check samples were taken and assayed for CaF_2 by the U. S. Bureau of Mines. The samples represent fluorspar-bearing material exposed in shallow cuts, trenches, and outcrops. A few check samples were taken of the split of drill hole cuttings and assay pulps. Sample locations are referred to drill holes indicated on the Operator's map attached to the application. A list of these sample assays follow:

Sample Number	Type Sample	Feet Width	% CaF_2 U.S.B.M.	% CaF_2 Applicant's Assay	Remarks
S-829	Spec	-	98.3	-	Select specimens of fluorspar from east outcrop zone <0.1% SiO_2
S-830	Horiz. Chip.	10.0	80.9	-	Fluorspar from shallow surface cut, 10 feet north of hole 58. One foot below natural surface. 12.4% SiO_2
S-831	Horiz. Chip	6.0	70.2		Fluorspar from south end of open trench between holes 48 and 54 - 3 feet above floor 22.0% SiO_2
S-832	Horiz. Chip.	6.0	81.5	-	Fluorspar from north end of open trench between holes 45 and 54, 4 feet above floor. 12.4% SiO_2
S-833	Vertical Chip.	3.0	19.1	-	Siliceous clay material under fluorspar from west side of open trench between holes 48 and 54 38.6% SiO_2
S-834	Horiz. Chip.	15.0	57.8	-	Surface outcrop 10 feet north of drill hole 90 28.9% SiO_2
S-835	Drill hole cuttings	5.0	48.8	40.7%	Cuttings from drill hole 98 Interval 0-5 feet Applicants Assay 0'-15'
S-836	Drill hole cuttings	5.0	33.6		Cutting from drill hole 98 Interval 5-10 feet
S-837	Grab sample	-	66.0	-	Grab sample from 20 ton stock pile of fluorspar on road west side of mineralized area
S-838	Split of assay pulp	25.0	13.2	24.2	Hole 73, Interval 0'-25'. Rerun assay by U.S.B.M. yielded 24 percent CaF_2
S-839	"	10.0	29.0	33.6	Hole 73, Interval 25'-35'

S-840	Split of assay pulp	5.0	37.1	45.5	Hole 73, Interval 35'-40'
S-841	"	5.0	21.0	40.7	Hole 81, Interval 35'-40', Rerun assay by USBM yielded 15.4 percent CaF_2.
S-842	"	15.0	28.8	35.6	Hole 82, Interval 60'-75'
S-843	"	15.0	10.3	23.9	Hole 84, Interval 0-15'. Rerun assay by USBM yielded 9.3 percent CaF_2.

Samples, taken by the Operator, of drill hole cuttings were collected for a run of 5 feet and bagged as one sample. This gave a sample weighing from 16 to 19 pounds which was then split several times. The two parts of the last split were bagged, one for assay, the other for panning. The rejects were bagged and are being held for whatever use they may have. This sampling was done under the supervision of the applicant's consulting engineer and is fully described in his report included with the application. The assaying was done by Frank W. Jones, Operator of the Gabbs Assay Office, and several of his assay results were checked and confirmed by the Union Assay Office in Salt Lake City (see page 14 of engineer's report with application). However, check assays on six (Nos. S-837 to S-843) of the Operator's assay pulps, by the Bureau of Mines, indicate a lower grade than was reported by the Gabbs assayer. Three of these pulps were rerun (Nos. S-838, S-841, and S-843) by the Bureau of Mines and one (No. 838) yielded a CaF_2 content closer to the Operator's assay, but the other two yielded an even lower grade than the first Bureau assays. From these results it must be assumed that the Operator's assays may average about 10 percent more CaF_2 than is actually contained.

Ore Reserves:

The applicant estimates 30,000 tons of proven (indicated) reserves that average about 45 percent CaF_2 in the ore body, partly delimited by drilling at the southeast end of the mineralized area. A study of the maps, cross sections, and drill hole assays indicate that this estimate of tonnage is reasonable but check assays by the Bureau of Mines of some of the drill hole samples indicates that the grade is probably about 10 percent high and that the average grade is about 35 percent CaF_2.

In addition to the applicant's estimated 30,000 tons of reserves, about 6,000 tons of ore of the same average grade is indicated in the vicinity of the proposed "C" adit and another 4,000 tons is indicated along the west side of the mineralized area. Total indicated reserves are therefore about 40,000 tons of ore that averages about 35 percent CaF_2.

Inferred reserves are estimated to total about 150,000 tons of ore that averages about 35 percent CaF_2. These reserves are in ore shoots along the east side of the mineralized area, between coordinates 4,800 N and 5,800 N, in a block of ground about 1,000 feet long, 200 feet wide, and 200 feet deep. These reserves are the target of the proposed exploration.

EXPLORATION

Applicant's Proposal:

The applicant proposed to explore the downward and lateral extent of the deposit by driving six adit crosscuts or drifts having an aggregate length of 1,460 feet and requiring 1,050 feet of access road construction and 140 feet of open cuts for portal preparation.

Examiners' Proposal:

It is considered by the examiners that a smaller project would be sufficient to adequately explore this deposit. The revised exploration program consists of adits at sites A, C, and D as proposed by the applicant. These would have an aggregate length of 720 feet and would require 800 feet of access roads, and 85 feet of portal preparation. The cost of the revised project would amount to less than half that proposed by the applicant.

Consideration was given to other methods of exploration, such as trenching, pits, wagon drilling, churn drilling, and diamond drilling but because of the extremely brecciated, silicified, and cavernous nature of the ore zone it was agreed that short drifts and crosscuts would yield the most useful and reliable information at the least cost.

Proposed Exploration Costs:

The applicant has provided detailed cost data. He intends to furnish all operating equipment that is required. Depreciation allowance is based on the estimated time of use and present value at a rate of 5 year complete depreciation of equipment.

Exploration work proposed by the examiners can be started within ten days after execution of a contract and can be completed in one year. The work should be done on an agreed unit cost per foot basis if a contract is granted.

Cost Estimate:

Construction of 800 feet of access road to adit sites A, C, and D and preparation of three portal sites requiring 85 lineal feet of open cut trenching. Driving three adit crosscuts size 5' x 7' in clear of timber, with an aggregate length of 720 feet.

Estimated average rate of progress for drifting and crosscutting: 2.75 feet per shift. Time required to complete project 262, 8 hour shifts or approximately one year.

		Estimated Amount
(a) Supervision, labor and accounting		$13,812.00
1 Superintendent-engineer-geologist part time as needed 12 months at $300.00 per month	$3,600.00	
2 Miners, rate $2.25 per hour 262 shifts at $36.00 per day	$9,432.00	
1 Bulldozer operator, rate $3.00 per hour 80 hours at $3.00	240.00	
1 Laborer-miner, rate $18/day, 10 days	180.00	
1 Accountant, part time, 12 months at $30.00 per month	360.00	
(b) Operating material and supplies		
Power - fuel oil, gasoline, lubricants	1,929.60	
Explosives, fuse, blasting caps and carbide	1,252.80	
Track - complete 12 lb. rail, 4" x 6" ties fish plates, bolts, spikes, switches	300.00	
Pipe 2 inch compressed air and 3/4 inch water and valves	475.00	
Ventilation pipe and tube - 8 inch dia.	350.00	
Timber at $120/m. $7.00 per ft. of crosscut - 30 feet at portals	210.00	
Transportation	280.00	
(c) Operating equipment		5,064.90

(1) Depreciation on equipment to be furnished by Operator		
1. Bulldozer - D-6 value $7,500.00 allowance for 1/2 month		
2. Mining equipment - value $14,502.00 allowance for 12 months	2,963.90	
(2) Equipment maintenance		
1. $8.00 per shift, 10 shifts		
2. $5.60 per shift, 262 shifts	2,102.00	
(d) Initial rehabilitation and repair	none	none
(e) Equipment to be purchased	none	none
(f) Miscellanmous		2,367.60
(1) Assays for CaF , 120 at $5.00 each		
Assays for SiO , 12 at $2.00 each		
Assays for Carbonates 12 at $2.00 each	648.00	
(2) Insurance and taxes		
Nevada State Industrial $7.25/100		
Federal S.S., OAB - employer 2.5%		
Nevada State Unemployment 2.7%		
Subtotal 12.45% of $13,812.00	$1,719.60	
Total cost		$26,041.90

COST DISTRIBUTION SUMMARY

(1) Construction of 800 feet of access roads and 3 adit portal sites requiring 85 feet of open cut trenches - average width 8 feet

Estimated Cost $ 1,193.50

(2) Crosscutting or drifting

Adit	Feet Length	Estimated Unit Cost	
A	120	$34.51	
C	150	$34.51	
B	450	$34.51	
Subtotal	720 ft.	$34.51	$24,848.40

Total estimated cost of project	$26,041.90
Government's share at 50%	$13,020.85
Applicant's share at 50%	$13,020.85

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OME-6033
(Fluorspar)

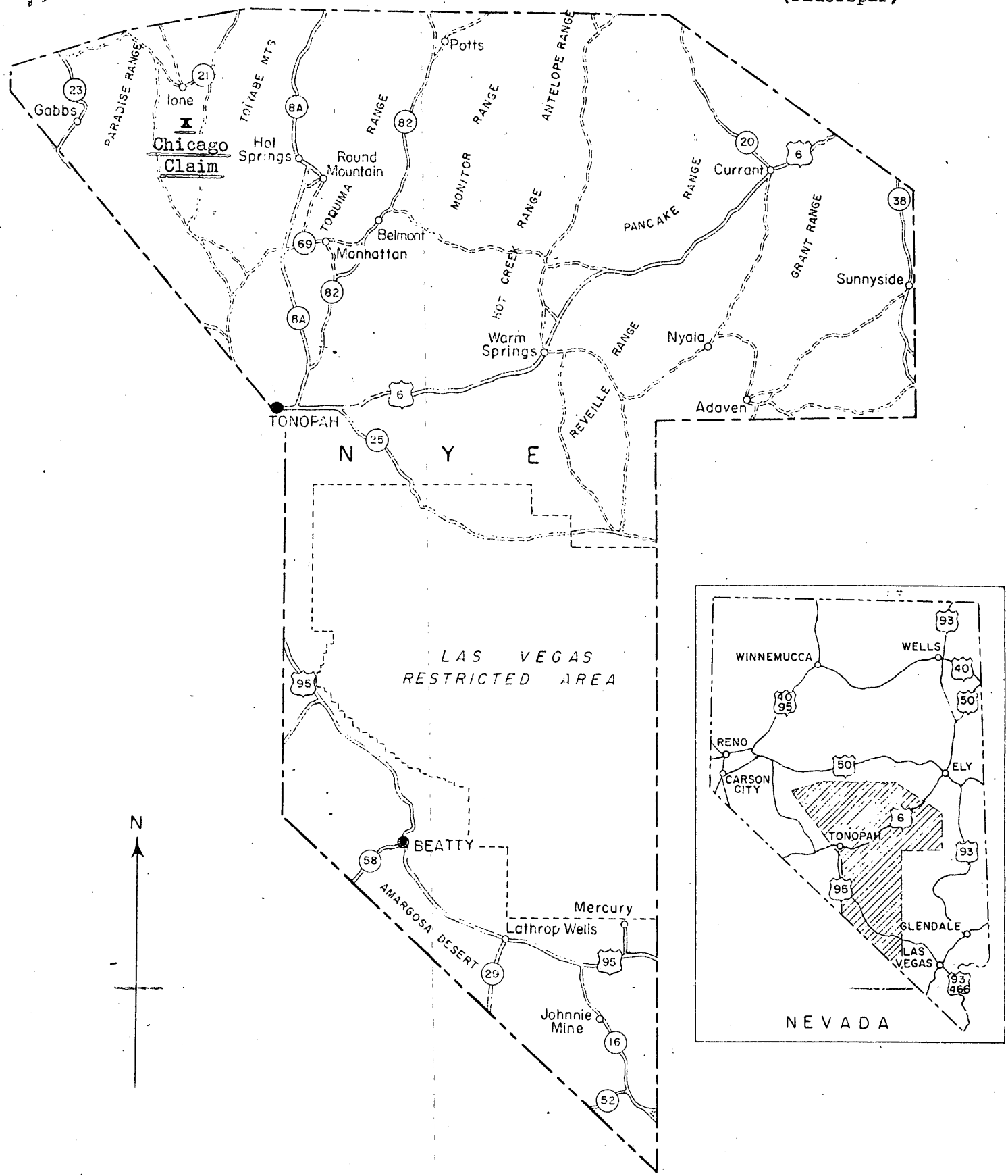

Figure 1. INDEX MAP OF NYE COUNTY, NEVADA

0 25 50 75 Miles

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MME Form 40
Dec. 1958

APR 10 1959 O.M.E.

6033

Budget Bureau No. 42-R1368
Approval expires Dec. 31, 1963

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

Pursuant to Public Law 85-701 (72 Stat. 700; 30 U.S.C. 641)

NAME OF APPLICANT *(Full legal name and mailing address as they should appear on contract if one is executed.)*

L. and G. MININ G COMPANY
GABBS, NEVADA

APPLICANT DO NOT USE THIS BLOCK

DOCKET NUMBER: 6033

DATE RECEIVED: Rec'd 4/7/59 4-10-59

REGION: II

DIVISION CODE: 600

BUSINESS ORGANIZATION *(Check one)*

- INDIVIDUAL [ ]
- CORPORATION [ ]
- PARTNERSHIP [X]
- OTHER *(Specify)* [ ]

STATE IN WHICH FIRM IS ORGANIZED

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

NAME	ADDRESS	TITLE
LINDSAY SMITH,	GABBS, NEVADA	PARTNER
GORDON SMITH,	GABBS, NEVADA	PARTNER
I. J. Mc CULLOUGH,	5820 S. ALAMEDA ST. LOS ANGELES 58, CALIFORNIA	PARTNER

MINERAL(S) FOR WHICH YOU WISH TO EXPLORE: FLUORSPAR

ESTIMATED COST OF PROJECT: $ $52,596.00

PROPERTY NAME	LOCATION COUNTY	STATE
CHICAGO LODE & ALLIED 1-7 LODE CLAIMS	NYE	NEVADA

GENERAL INSTRUCTIONS

Before filling out this application, please read the *OME Regulations for Obtaining Federal Assistance in Financing Explorations for Mineral Reserves* (30 CFR Chap. III). To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 2, existing mine workings and geology in item 3, and the proposed exploration work in item 5. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 3(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Office of Minerals Exploration, Department of the Interior, Washington 25, D. C., or with the nearest OME Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief, and that he would not ordinarily undertake the proposed exploration under current conditions and circumstances at his sole expense.

March 31st 1959
DATED

Gordon Smith
BY *(Signature)*

Partner
TITLE

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

1. Financial Eligibility:

(a) Submit evidence of efforts made within 90 days preceding the filing of this application to obtain credit from your bank of account and at least one other banking institution or other private source of credit. Such evidence shall include true copies of correspondence which show: (1) date of loan request, (2) amount and terms requested, (3) proposed use of loan funds, and (4) the replies from credit sources. If the loan was offered under terms which you consider unreasonable, state why you consider them so.

(b) List names and addresses of affiliated, parent, or controlling companies or organizations and state extent and nature of their interest.

(c) State how you propose to furnish your share of the exploration [redacted] cost.

2. Applicant's Rights in Land:

(a) State your interest in the land and mineral rights, whether owner, lessee, purchaser under contract, or other. If you are not the owner, submit one true copy of the lease, contract, or other document (with address of owner) under which you control the property. Describe all liens, mortgages, or other encumbrances on the land and state book and page number and official place where recorded.

(b) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all adjacent land which you own or control. Describe any part of the land or workings which should not be subject to Government royalty and liens. If the land consists of unpatented claims, state book and page number for each recorded location notice, including amended locations, and official place where recorded. State all the names by which you know the property.

(c) For all land or mineral rights encumbered or not owned, submit five copies of Lien and Subordination Agreements on MME Form 52. If the agreements cannot be obtained, state reasons and provide copies of letters of refusal.

3. Physical Description:

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the land. Include existing mine workings and all production facilities.

(b) State your interest, if any, in operations described in (a).

(c) State, if you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves, giving quantities and grades and sampling methods used. Support your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you have, indicating whether you require their return.

4. Accessibility of Property:

(a) To aid the OME representative who may examine the property, state name and address of person who will meet him; give directions for reaching the property; and describe accessibility of property and of any mine workings.

(b) Name the shipping and supply points and state the distances to the property.

5. Exploration Work:

(a) Describe fully the proposed exploration work giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and sections as necessary. Show location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *land boundaries* or to the closest identifiable corner.

(b) If an access road must be built, show the proposed location on the property map and state the length, type and construction methods proposed.

(c) If an OME contract is executed, state how soon thereafter work would be started and finished. State your anticipated average daily or monthly rate of progress for each type of work.

6. Experience:

State your operating experience and background to conduct this exploration work and also that of the person who will supervise the work.

7. Estimate of Costs:

Furnish detailed estimates of the necessary costs *for each item of the work proposed in 5(a)* under the headings listed below with a total for each heading and the estimated total cost of the work. Costs for any work to be performed by an independent contractor should be listed separately under category (a) below. Costs for any work that is not to be performed by an independent contractor should be listed under categories (b) through (g).

(a) Independent contracts. State the total cost of any proposed independent contract for all or any part of the work, and the number of units and the unit cost for each type of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, or per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. (*Note*—If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. The cost of supervision, engineering and geological services, outside consultants, and labor should be itemized by numbers and classes of employees; rates of wages, salaries or fees; and periods of employment. State whether these services are available.

(c) Operating materials and supplies. List items of material and supplies giving quantity and cost of each. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of equipment and tools costing $50 or more per unit. Give specifications and indicate how each item is to be acquired—i.e., rented, purchased or provided by the applicant. If rented or purchased, state the estimated rental or purchase price. If furnished by the applicant, state condition and present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant which will be used in the exploration work.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration work, stating specifications and cost including labor, materials, and supervision.

(g) Miscellaneous. Describe the type and estimate the cost of repairs and maintenance of the operating equipment listed in 7(d). Do not repeat initial repairs listed in 7(e). Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories. [*Note*—The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to: (1) acquiring, using, or possessing land and any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof; (2) general overhead, corporate management, interest and taxes (other than payroll and sales taxes); (3) insurance (other than employees' liability insurance); and (4) damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).]

INT.-DUP. SEC., WASH., D.C. 48740

MME Form 40, L and G Mining Co., Gabbs, Nevada.

1. Financial Eligibility:
(a) The applicant has conferred with the officials of two Nevada banks and submitted to them a request for a loan. The money to be expended in exploring for fluorspar and other minerals on the Chicago Lode and Allied Mining properties, Nye County, Nevada.
The replies are attached to this application as appendix A-1, and A-2, which see.

(b) See first page of application, MME Form 40, Officers or Partners, etc... See also, Appendix B, "Articles of Partnership, attached hereto. Recorded at Tonopah, Nevada, Jan. 28, 1959, book 30, Pg. 7.

(c) By purchase of labor (including supervision, engineering, sampling, assaying, etc.) and materials and supplies in money, and by providing for use in performing the work, all machinery, equipment, i.e., air compressor, rock drills, hoses, slusher scraper, caterpillar tractor, 3/4 ton truck, air and water pipe, rail, mine cars, ventillation fan, ventillation pipe, tanks, and tools necessary and appropriate.

2. Applicants Rights in Land
(a) Owner, in the case of the Chicago Lode claim, a patented lode mining claim, U.S. Mineral Survey No. 1272-50. See copy of Deed of Conveyance here attached as, Appendix C-1.
Lesee with option to purchase contract, in the case of the Allied Group of seven (Allied Nos. 1-7 inclusive) lode mining claims (Unpatented) See reproduction of lease and option to purchase contract appended hereto, Appendix C-2.
There are no liens, mortgages, or other encumberances on the land.

(b) The Chicago Lode claim and the Allied Group of seven claims cover completely an area approximating, 140 acres in Section 10, T. 11 N., R. 39 E., M.D.B. & M. (See map No. 2 of report by B. York, here appended.)
No part of the land is excepted as being subject to Government royalty and liens.

Name of Unpatented Claim	Recorded Page	Recorded Book	Place Recorded	
Allied No. 1	248	104	Tonopah,	Nevada
" No. 2	248	104	"	"
" No. 3	249	104	"	"
" No. 4	250	104	"	"
" No. 5	250	104	"	"
" No. 6	251	104	"	"
" No. 7	252	104	"	"

The applicants know of no other names by which the property is or has been known.

2. (Cont'd)
(c) See "Owner's Consent to Lien," endorsed by, Roy C. Ames, seller of the Allied Group of seven unpatented lode mining claims, appended hereto, as appendix D.

3. Physical Description
(a) The Chicago Lode claim was located during the early silver "boom" in the Grantsville area and was, apparently, patented shortly thereafter. The "Ancient Shaft" near the center of the claim, (see map No. 3) , seems to have been the only ambitious digging done on this claim during the early period. This is a steeply inclined prospect shaft having a depth (estimated) of approximately 50 feet.

Roy C. Ames was among the first to recognize the presence of fluorspar in this area and located his Allied Group of seven claims. Work done from the discovery of fluorspar to December, 1958, the date when the present operators acquired the ground, consisted of shallow trenches, cuts, pits, and road construction. These are shown on map No. 3. It is reported, though there are no records to substantiate it, that approximately 100 tons of acid grade fluorspar was shipped from this ground. Part of it from the cut on the Chicago Lode and part from the cuts on the Allied No. 6 and No. 7 claims.

The present operators did exploratory drilling with wagon drill equipment (drilling done by Boyles Bros. Drilling Co. under contract) during the period, January 20, to Feb. 20, 1959, drilling 50 holes, with an aggregate depth of 2,254 feet. These were all vertical holes. Their positions and data on depth, assay, etc., are shown on maps No. 3, 4, 5, and 6 of the report by B. York, appendix E, hereto.

Preparatory to drilling, four days work was done with a bulldozer-equipped caterpillar tractor grading access ways and set-up sites for the drill.

For additional information and detail, see report by B. York, appendix E, to this application.

(b) The applicants participated as operator in exploration work following the execution of a sales contract to them by Roy C. Ames, on December 10, 1958. The applicants had no part in work done prior to this date. Nor did they hold any proprietary interest.

(c) It is reported (hearsay) that 100 tons of acid-grade fluorspar have been shipped from these claims but the applicants have not seen settlement sheets to substantiate such a report.

(d) See report by B. York appended to and being a part of this application.

(e) See report by B. York appended to and being a part of this application.

(f) See report by B. York appended to and being a part of this application.

3. (Cont'd)
(g) Four copies of the report by B.York, one with each applic ation form, are being submitted. This report contains geological and engineering observations, maps, assay reports and interpretations. None of these reports or their maps need be returned.

4. Accessibility of Property
(a) OME representatives who may wish to examine the property may make arrangements to do so by contacting, Gordon H. Smith. If contact is to be made by phone, call, Gabbs, 4811. If by letter, address correspondence to, Gabbs, Nevada. The represent- ative will be guided to and over the ground by a person thoroughly acquainted with the property.
The position of the property, with access roads to it are shown on map No. 1 of the report by B. York. All mine workings, except the "Ancient Shaft" are open and in condition for inspection.

(b) Railway shipping points are at Fallon, Churchill County, Nevada, and Luning, Mineral County, Nevada. Both are on branches of the Southern Pacific Railroad System. Luning, a distance of 56 miles is nearer than Fallon, at a distance of approximately 110 miles.
Gabbs, on Nevada Highway No. 23, is 25 miles, via Brunton Summit, from the property and has regular truck-freight service.
Some supplies are available in the markets at Gabbs. Small pipe fittings and small tools, also petroleum products (lubricat- ing oil, grease, diesel oil, and gasoline) are always available. The markets at Fallon stock most of the supplies that will be needed, or orders placed in Reno or San Francisco will bring delivery at Gabbs in two to four days.

5. Exploration Work
(a) See report by B. York, which accompanies this application. (Appendix E) His report gives a general description of the proposed exploration work and shows its position on the property.
A tabulation of work by items follows, including entrance preparation and road construction.

Item	Length of Adit, ft.	Entrance Prep.	Access Road to be Constructed, ft.
Adit A	120	30' of cut	340
" B	160	25' of cut	Included with Adit A
" C	150	25 of cut	130
" D	350 adit & 100 x-cut	30' of cut	400
" E	200	30' of cut	180
" F	390 adit & 80 x-cut	Timber entrance with two sets	none
TOTALS	1460 feet	140' of cut	1,050' of road construction

Dimensions of the adits, 5 feet wide, 7 feet high.

5. (Cont'd)
(b) Four short stretches of road must be constructed to provide access to the proposed adits. The length of each stretch is listed in the table of 5 a.) with the adit or adits that it will serve. The total length of access road that must be constructed is, 1,050 feet. See report by B. York, appendix I, for the position of these roads.

(c) Work will commence within ten days after execution of the contract, weather permitting, one shift per day, five or six days per week, until completed. Anticipated rate of progress in driving the adits is 2½ to 3 feet per day. The work will be completed in two years.

6. Experience
The applicants have been engaged in mine-exploration, mining and mine financing for a period in excess of 20 years. A mining engineer (an engineer licensed as a Registered Prof. Engineer in Nevada) will supervise the work and take care of engineering and geological services.

7. Estimate of costs
(a) Independent Contracts - None.
(b) Personal services
2-miners @ $2.25 per hour working 5 to 6 days per week.
1-part time, supervisor-engineer-geologost, working 6 to 8 days per month at a retainer salary of $300.00 per month.
1-part time accountant @ $30.00 per month for actual services.
These services are available.

(c) See tabulation

(d) Operating equipment.
See tabulation. All of the items will be furnished by the applicant.

(e) Initial rehabilitation and repairs. None.

(f) None.

(g) Miscellaneous
Repair and maintenance of operating equipment. See tabulation with 7 d.

Analytical work
Assaying for CaF_2, 240 @ $5.00
" for SiO_2, 24 @ 2.00
Assaying for carbonates, 24 @ 2.00
Crushing samples 240 @ 0.50
Accounting part time @ $30.00 per month

7. (Cont'd)

(g) Workmen's Compensation Insurance--- 3 %
State and Federal O.A.B. ---------- 2 %
State Unemployment Insurance------- 3 %

Tabulation of Cost for Complete Job
Supplies (7c)

Track ties	$240.00
Spikes and bolts	37.00
Dynamite	1,980.00
Caps	175.00
Fuse	460.00
Timber	196.00
Carbide	80.00
Drill rods	2,200.00
Loading sticks	6.00
Grinding wheels	75.00
Gasoline	480.00
Lube oil	640.00
Diesel oil	3,600.00
	$10,369.00 for consumable supplies

Depreciation and maintenance of Equipment (7g)

Maintenance of equipment	$ 2,750.00
Depreciation of equipment	6,050.00
Labor (direct)	21,395.00
	$40,564.00

Miscellaneous Expenses

Mobilization transportation	$ 100.00
Mobilization labor	120.00
Demobilization transportation	100.00
Demobilization labor	120.00
Supervisor, engineer-geologist	7,200.00
Travel expense	1,296.00
Accounting	720.00
Crushing samples	120.00
Assaying	1,296.00
Rent on shop & housing at Grantsville	960.00
	$52,596.00

Cost Distribution by Work Elements

Construction of Access Roads	$ 1,600.00
Preparation of Adit Entrance (Trenching, etc.)	1,500.00
Driving the Adits (All costs not entered above are charged here; sampling, supervision, etc.)	49,496.00
	$52,596.00

Distribution of the Cost to Each Adit
(Distributed in proportion to length of each adit)

Adit	Length in feet	Distributed cost
A	120	$ 4,324.00
B	160	5,760.00
C	150	5,410.00
D	450	16,200.00
E	200	7,210.00
F	380	13,690.00
Totals	1460	$52,596.00

Cost per foot is, $35.05, approximately
(All costs)

MME FORM 40, L&G MINING Co., GABBS, NEV.
APPENDIX "E"

REPORT ON AN ENGINEERING AND GEOLOGICAL STUDY OF THE CHICAGO LODE AND THE ALLIED GROUP OF LODE MINING CLAIMS

TO

LINDSAY AND GORDON H. SMITH

GABBS, NEVADA

by
Bernard York
Mina, Nevada

EXTRA COPY
RECEIVED O. M. E.
DATE APR 10 1959

Location of the Property

The property is approximately twenty miles, air miles, easterly from the town of Gabbs, Nevada, in the Union Mining District, Nye County, Nevada. It is approximately one mile southerly from the mining camp of Grantsville and is situated on the east slope of Grantsville Ridge, a part of the Shoshone Mountain Range. (See U.S.G.S., Ione Nevada Quadrangle Map, also map No. 1 of my report.)

The property is accessible by improved dirt roads from Gabbs, being a distance of 25 miles via the Brunton Pass road, and 46 miles via the Burnt Cabin Summit road. Gabbs is 31 miles via black-top highway (Nevada Highway No. 23) from Luning, a shipping point on the Southern Pacific Railway System. The property, therefore, is 56 miles from a rail shipping point, 25 miles being over improved dirt road. The remainder,

31 miles, being black-top highway. At the time of this writing the Nye County Road Maintenance crews are working on the Brunton Pass route, grading and gravelling, so this should soon become an all-weather road.

The elevation of the property ranges from 7300 at the east boundary to over 7700 feet at the west boundary. This is a rather well watered section of Nevada so the land supports a good growth of Pinon Pine and Juniper trees but there are no trees on the ground suitable for mine timber. During a severe winter the snow fall may be sufficient to encumber mining activities for a few weeks but ordinarily year-round operations should be practicable.

Power and Water

Electric power from a utility source now serves the community of Gabbs. The power line extends across country from near Tonopah to Gabbs. From your property to the nearest point on this line, a point near Pactolis, is a distance of approximately 18 miles.

Water, in the small quantity needed to carry out an exploration program, is available from several near-by sources. The nearest being an artesian well at the camp of Grantsville, a distance of about one mile. The next nearest being either of two mine shafts having water standing within a few feet of the surface. These shafts are at the camp of Grantsville and about one and one-half miles from the property. Another is, Union Spring, at a road distance of about 4½ miles where the water flows into a cattle watering trough.

Water, in the quantity required for a mill, can be obtained by drilling wells in Ione Valley. The distance from the property would be about six miles. Or, it is probable that the mine shafts at Grantsville will produce sufficient water for milling.

The Mining Claims

Eight lode mining claims in a contiguous group, covering an area of approximately 140 acres, comprise the mining property. One of these, the Chicago Lode, is a patented claim and was recently acquired by you through outright purchase. The other seven claims, namely, Allied 1-7, inclusive, are unpatented claims being held by you under a purchase contract from Mr. Roy C. Ames.

The property boundaries of the Chicago Lode claim were re-established by Mr. L.B. Spencer, land surveyor, in June, 1950. The corner posts are standing, and though not re-surveyed by me, seem to me to be in proper order. The Allied claims have not, according to Mr. Roy C. Ames, been surveyed. I have not surveyed them, but I have sought out some of the boundary posts and from doing so gained the feel that the claim boundaries are in fairly good order. (See Map No. 2 for a layout of the claims.)

For the purpose that I have faced so far, that of establishing the position of mine workings and drill holes relative to the property boundaries, I have used corner No. 4 (the south-east corner) of the Chicago Lode claim as point reference and the south end line of the Chicago Lode claim as direction reference. As elevation datum I chose ground level (top of a steel

pin) at corner No. 4, Chicago Lode claim as having an elevation of 7500.0 feet above sea level. The elevations given on my maps are all referred to this datum.

Regional Geology

Appraisal of the ore potential of the Chicago Lode-Allied Group is the main issue here. However, the fluorspar deposits on these claims are not the only ones extant in the district. And further, fluorspar deposition seems to have taken place under similar structural conditions and to exhibit evidence of having taken place through a rather uniform chemical sequence throughout the district. In fact, the areal distribution and the mineralogical similarities suggest that the deposits are scattered along one main structural zone and that they all owe their origin to the same source of solutions. If this be a valid postulate, a knowledge of regional conditions should aid in appraising the potential of each deposit. A brief description of the regional geology will, therefore, be given space here, but limiting the discussion to an area on the west front of the Shoshone Range extended from about two miles south of Grantsville, north to Berlin.

The oldest rocks of the region, according to Muller and Ferguson (Geological Survey Professional Paper 216) are (Permian?) meta-andesites, locally called green-stones or andesite. These old volcanics are overlain by a Triassic series of slates, conglomerates, and limestones. The latest rocks are Tertiary flows of rhyolite and andesite. In the vicinity of the Chicago

Lode-Allied Group a rather massive outcrop of rhyolite contains prominent phenocrysts of feldspar (up to several millimeters in diameter) a textural feature which suggest that the mass may be intrusive. Furthermore, the mass butts against the Triassic sediments at a steep angle, a condition that also suggests intrusion. The contact of this rhyolite against the sediments strikes approximately, north-south, conforming with the alignment of the main structural feature of the area.

Post-Triassic deformation is in the form of faulting and tilting. The major alignment of the faulting is north-south, but minor to major cross faulting is apparent. Tilting is downward toward the east giving the sediments an easterly dip. Locally, blocks are highly contorted and do not conform with the main attitude in the area.

Post-Tertiary (probably recent) faulting has taken place along the west front of the Shoshone Range and locally has contributed to the development of considerable relief. Whether this faulting played a part in the development of the fluorspar deposits is not known at this time. I presume not. Therefore, our chief concern in this faulting is how and to what extent it may complicate the search for mineral bodies.

The fracture zone (fault zone) of primary interest here, because it is the axis along which fluorspar deposits occur, extends from Hilton Canyon on the south to near Berlin on the north, a length of 4 to 4½ miles. The southern portion, from Hilton Canyon to Grantsville, a distance of about 2 miles strikes about north-south. North from Grantsville the alignment is

north 20 degrees to 30 degrees west. Its attitude, from my present state of knowledge of it, appears to be rather steep, in places near vertical, in others dipping steeply easterly or westerly. Since this appears to be a zone of fracturing rather than a discrete fault, and this notion is borne out by its complexity, we should expect to find variations in width, in intensity and in attitude, also divergences from its main alignment. These features are manifest during field observations.

Bold siliceous outcrops mark the alignment of this fracture zone. Fluorspar is, almost without exception, associated with these siliceous outcrops. In places composing as much as one-half of the hard outcrop, in other places occurring under, along side of, or near the siliceous mass. Field observation of the silica-fluorspar ore shows evidence (fluorspar as a filling around granules and fragments of silica) that the introduction of most of the silica, the strong silicification, preceded the introduction of fluorspar. Furthermore, that fluorspar entered the silicified mass only where the silica was shattered or brecciated and thus permeable. Fluorspar lying under or along side of the siliceous mass occurs as replacement of limestone or as filling along fissures. Silica forms part of the ore gangue in the replacement bodies and in the fissures. Whether the deposition of this silica was concurrent with the fluorspar is not yet known.

This intimate association of the fluorspar with the siliceous masses together with the fact that both the siliceous masses and the fluorspar are aligned along the north-south

fracture zone leads to certain conclusions regarding the origin and the channeling of the mineralizing solutions and the order of deposition.

1. The mineral bearing solutions responsible for the heavy silicification and fluorspar deposition seem to have risen along the same channels. This is manifest by the close special relationship of fluorspar bodies to masses of silicified rock.

2. The solutions in the early stage deposited much silica and but little fluorspar. Later the reverse seems to have been the case for much of the fluorspar was deposited without the concurrent deposition of silica. This is manifest by th occurrence of fluorspar as filling in fractured and brecciated portions of the silica masses and by fluorspar as replacement ore and as fissure filling under and along side of the silica mass. (The sections in map no. 6 depict the conditions to the extent that they are now known in the Chicago Lode area.)

3. The silica masses appear to be tabular, indeed, from inspections so far they are tabular, and lie across the top of the fissure or fissures. An idealized cross section would show a mushroom top of silica, slightly tilted or nearly horizontal, spread out over a stalk that is the fissure. A truer picture would probably show several stalks. What conditions and what sequence of events could lead to such a deposit? In my opinion, the solutions rising along the fissures encountered a layer of easily replaceable rock;

easily replaceable because of its chemical composition or because it was shattered and, therefore, permeable, where the solutions spread out and deposited their load of silica. As deposition of the silica proceeded portions of the channels became completely dammed, other portions only partially so. Following this, the surge of the solutions carrying principally fluorine deposited fluorspar in the portions of the channels that remained open or replaced the fissure walls and the bottom portion of the silica mass with fluorspar.

I can't help but have the impression that the mineralization that I have been describing here bears close resemblance to the action in a hot spring that is rising in a fissure vent of considerable length. The siliceous sinter top of the hot spring having as its counterpart the silica mass. The most obvious difference being the physical features of the silica. The silica masses in this fluorspar region are of dense, cherty material and not the least bit porous and friable. Perhaps the similitude would seem more acceptable if we disregarded the upper several hundred feet of the hot spring, for I believe that erosion has removed at least several hundred feet since mineralizing activity ceased near Grantsville.

The mineralogy of these deposits is relatively simple. Silica, fluorspar, and some calcite, with residual carbonates and clay are the only minerals present in abundance. Traces of barite are suspected, though not as yet observed. The iron-stained decay product at the surface suggests that some siderite may be present. These do not show manganese oxide so

rhodochrosite and rhodonite are certainly not abundant. Metallic minerals, except for traces of pyrite, are conspicuously absent. A spectroscopic examination of several specimens shows some lithium but no strontium.

My comments about the geometry, supposed mode of occurrence, and mineral composition are for the portion of the deposit to a depth of fifty feet or less. Mine openings and drilling have not yet penetrated them to greater depth. What conditions are to be found at greater depth remains to be explored.

Exploration Work

Prior to December, 1958 the property owners did shallow exploring by digging pits, trenches, and shallow shafts and by stripping and trenching with a bulldozer. The exploring that was done on the Chicago Lode-Allied ground is shown on maps No. 3, 4, and 5. Exploration by drilling was undertaken by you beginning in December, 1958 and carried on until March 25, 1959. Considerable thought was given to the choice of drilling equipment. Boyles Bros. Drilling Company's field representatives joined in the deliberations to aid in appraising the problems of drilling and to submit prices for drilling under contract. The fractured, fissured, and vugy condition of the rock, particularly the hard siliceous masses would, we were sure, make core drilling with a diamond drill impractical and excessively expensive. In fact, Boyles Bros. men declined to make any commitment for core drilling, except to say that they might contract to do the drilling provided that we, the operators, agreed to assume all of the bit costs. Apparently these men,

men with a long and varied background of experience in drilling, anticipated slow drilling, many delays for running casing or cementing, and the destruction of diamond bits on hard, loose granules. So, deliberations turned to a consideration of what other equipment might successfully drill the ground.

Boyles Bros. had done exploratory drilling on deposits of silica sand and of barite with wagon-drill (percussion drill) equipment. They had been fairly successful in completing holes to a depth of 100 feet. The equipment, consisting of a 4½ inch percussion drill on a 12 foot carriage mounted, along with a sample collector, on the back of a small catorpillar tractor, was still in tact and available. A 600 cu. ft., portable, air compressor was also available. The men thought that they could drill the fluorspar ground with this equipment and were willing to attempt to do so at a contract price of $2.15 per foot of hole. We, the contractee, were to do what over grading was necessary to provide access to drilling site. The agreement was consumated and the drilling began on December 16, 1958. Holes, 1 through 47, and 99 through 107, were drilled near Berlin and Union Canyon. Holes, 48 through 98, were drilled on the Chicago Lode-Allied ground.

I had hoped that many of the holes could be drilled inclined at about 45 degrees from the vertical so as to cut across any steep structures. Hole No. 1 was drilled inclined at 45 degrees. The drill runner insisted that the equipment would not blow the cuttings out of an inclined hole. I insisted that an attempt be made, even though it be a failure, as an experiment to determine whether inclined drilling was possible

with the equipment. The troubles experienced in drilling hole No. 1 convinced me that the driller was right. For the first 10 feet all went well, from 10 feet to 15 feet about half of the cuttings were blown from the hole, from 15 feet to 20 feet less than one-tenth of the cuttings could be blown from the hole. The bit was thoroughly buried in cuttings and it was only after a considerable struggle that the driller succeeded in removing the bit from the hole. After this attempt all holes were drilled vertical.

Difficulties were experienced, even in vertical holes. Some of the holes could not be carried beyond a depth of ten feet and only a few, particularly those within the ore zone, could ~~not~~ be put down to a depth of more than thirty-five to forty feet. Any condition that prevented flushing the cuttings out of the hole stopped progress in the hole. Caving of the walls of the hole was a troublesome factor. Caving at depths under twenty-five feet delayed drilling rate but ordinarily did not prohibit further drilling. Caving at depths greater than twenty-five feet prevented any further advance. The cuttings simply would not be flushed out of the hole by the quantity of air that could be sent down through the drill rods. Vugs, cavities or crevices, at what ever depth encountered, and they are numerous in the ore zone, prohibited advancing the hole. As soon as the bit entered one of these openings return of cuttings ceased, thus no sample was obtained and nothing could be gained by continuing the drilling.

You will note in the drill hole data exhibited on maps No. 3, 4, 5 and 6 that at some sites several holes were drilled but a few feet apart. This represents an attempt to get a hole down. If the first attempt failed, the rig was moved over a few feet and a new attempt made. At some sites the scheme was successful, at others a failure.

Topography together with bare-rock surfaces limited a choice of drilling sites. A caterpillar tractor simply can't be walked around on a 20 degree to 30 degree slope of bare, jagged rock. This condition prevented the drilling of holes in the outcrop section between hole 69 and 51. No holes were drilled to the west of the row of holes, 62-69, because of the same condition. There was just no practical way of getting the drill rig into position.

Inspite of difficulties in the drilling and limitations on drill sites, fifty holes, having an aggregate depth of 2,254 feet, were drilled on the Chicago Lode-Allied ground. While depth of drilling, except out in the limestone wall rock, left much to be desired, much useful information regarding the geometry of the ore and its position and possible extent was gained. Further exploring, both as to method and position can be guided by what has been learned.

Sampling

A one and seven-eigth inch, tungsten carbide, cross-bit was used for the main drilling. A 3 inch bit was used in collaring the hole so that a 2 to 3 foot length of 2½ inch pipe, containing the sample pick-up head, could be installed in the top of the

hole. Cuttings were collected for a run of 5 feet, then bagged as one sample. This gave a sample weighing from 16 to 19 pounds which was then split in a riffle type sample splitter. The two parts of the last split were bagged, one for assay, the other for panning. The rejects were bagged and are being held for what ever uses they may have, metallurgical tests, mineralogical study, or re-assay if that seems adviseable.

Panning of one of the split out portion of the sample was the first step in investigating the composition of the sample. The material was first washed down a bit, then inspected under a hand lense in order to identify the principal constituents. After additional washing the concentrates were examined and an estimate of the grade, in CaF_2, was made. This work was done in the field and as promptly after the sample was available as was practical. A record was kept for each hole. By prompt attention, this "rough and ready" classification kept pace with the drilling and, therefore was available in time to aid in the choice of site for the next hole. If we had waited for assays, our guidance information would have lagged to five days behind the drilling.

The sample splitting was done by my helper, and done very conscientiously and systematically. The panning, classifying, and estimating were done by me. When I could devote my full attention to this activity, our guidance information kept pace with the drilling. Decisions could be made on the moment, whether to continue or to quit a hole.

After a hole was completed and the cuttings from each five foot section were classified by panning, I combined the

"assay-split portions into one composite sample where several contiguous sections appeared to be of about equal quality. This composite, in some cases representing a five foot interval, in other cases as much as twenty-five feet, was sent out for assay. When classification by panning showed little or no fluorspar, no sample went for assay. Complete reliance has been placed on the panning estimate and the grade put down as "nil." This is the case in the hole data shown on maps No. 4, 5, and 6.

Frank W. Jones, operator of the Gabbs Assay Office, did our assaying. He has, through the years, established himself as a very reliable and competent assayer. Furthermore, he voluntarily sent the pulp from several samples that he had assayed to Union Assay Office, of Salt Lake City, just to have confirmation of his work. I had the opportunity to compare to two reports and find the agreement to be very close. We need not, therefore feel any uncertainty about our assays.

Frank Jones makes a charge of $5.00 for a calcium fluoride assay. This is in line with the prices of other assayers. Furthermore, there were no costs for packaging and shipping, and time lost in transit was avoided.

Rocks of the Chicago Lode-Allied Group

From the top of Grantsville Ridge, eastward down the slope almost to the bottom of the ridge, the rock is limestone or dolomitic limestone, in places thin bedded. The eastern base of the ridge is a rhyolite containing coarse phenocrysts, a texture which suggests that it could be intrusive. I have not

yet spent much time on an observation of the thickness or attitude of the limestone mass, but have the impression that the thickness is in excess of 500 feet and that the bedding strikes some what west of north and dips 30 degrees to 40 degrees east.

Hard siliceous outcrops, elongated north-south, are a prominent surface feature. One can be observed near the crest of the ridge, another about half way down the eastern slope, and a third near the eastern base of the ridge. From their texture and composition, I identify them as being masses of silica that has replaced limestone.

Ore Occurrences on the Chicago Lode-Allied Group

Two ore (fluorspar) bearing structures are now known. One, which for the purpose of this discussion we shall call the East Zone, strikes roughly, north-south, and is just west of or astraddle of the east side line of the Chicago Lode claim. The other, which we shall call the West Zone, strikes roughly, north-south, and is approximately 100 feet westerly from the west side line of the Chicago Lode claim. Both of these structures, together with the exploratory digging and drilling that has been done, are shown in plan on map No. 3.

The East Zone is marked by a hard siliceous rock outcrop that stands out in prominent topographic relief. This siliceous rock mass is continuous for a length of about 1500 feet, and extends from coordinate 4870 on the south to and beyond coordinate 5920 on the north. For much of its length the width is 150 to 200 feet. Observations at its southern terminus suggests

that it does not extend for many tens of feet into the limestone. Or, if it does, narrows down sharply. This impression is supported by surface observations and by information from drill holes. This shallowness may be but a terminus feature. Near its center the mass may extend to considerable depth. Exploring so far has not been such as to reveal this.

Both the eastern and western boundaries of this siliceous mass appear to form steep contacts with the limestone with, here and there, thin tabular extension out into the limestone. This abruptness of walls suggests that silica replacement took place within the limits of the fracture zone. If this be so, we should find the fissure or fissures extending below the silica mass. Drill holes, 81 and 83, appear to be along the alignment of a fissure but could not be drilled deep enough to reveal the information that I wanted.

A belt containing fluorspar, that has a surface exposure varying in width from 20 to 100 feet, forms the eastern border of this hard siliceous mass. Portions of this belt are now known to be of ore grade. The largest, and the one most thoroughly explored, is at the south end of the zone and is known to extend from coordinate 4865 north to 5020north (see plan map No. 3 and 4, and sections, 1, 2 and 3, of map No. 6). Another extends from coordinate 5265 north to 5350 north, (see plan maps No. 3 and 4, and section 4, of map No. 6). A third extends from coordinate 5625 north to 5800 north (see plan maps No. 3 and 4, and section 5, of map No. 6). The intervening portions show considerable promise.

The segment from coordinate 5020 north to 5265 north shows considerable fluorspar in the outcrop and, therefore, warrants exploration. Difficult topography preventing us from moving the wagon drilling equipment up onto it, else we would have attempted some drilling there. The segment from coordinate 5350 north, to 5625 north shows some fluorspar, here and there, along the eastern margin of the siliceous mass. Exploration should be done to determine whether ore lies under the hard siliceous top.

The western margin of this belt rises up as a bluff, a condition which suggests that the hard siliceous rock once extended out over it in the form of a cap. Drilling at the south end, particularly the row of holes 61-69 that are along the face of the bluff, seems to indicate, rather conclusively, that the ore extends under the bluff, and suggests that the hard siliceous rock once capped the ore in that area. This same condition seems some what apparent at holes 49-51, also. A similar condition could exist at holes 38-98, though the holes in that segment are not in position to reveal it.

Evidence that the hard siliceous rock once formed a cap completely covering the ore plus the evidence, obtained so far, that the outcroping ore extends back under the hard siliceous remnant leads me to the conclusion that we have an excellent criterion for guiding additional exploration work. Furthermore, if this supposition be correct the bodies of ore should be large and readily accessible for mining. My proposals on additional exploring will be given later, after a description of the "west zone."

The West Zone is a discrete fracture or shear zone, in limestone, striking, north-south, and dipping 30 degrees, east. Surface cuts have opened it at several points. At the most northerly cut, the ore, having a fairly siliceous gangue, is 5 to 7 feet thick, and rests on a coherent and well defined footwall of limestone. The hangingwall, which is limestone also, is shattered, some what decomposed, and rather indefinite. The ore, here, assays about 50% contained CaF_2. At the southernmost cut, the zone terminates against or is displaced by a northwesterly trending fracture. Inspection of these cuts reveals a zone of shearing 40 to 50 or more feet in width with the fractures several feet to 5 or 10 feet apart. These fractures contain some fluorspar and much calcite. No samples were taken here by me. Hard siliceous rock forms the outcrop of this zone at its south end. This appears to be a remnant of what was once a much larger mass. I would speculate that it once extended all along the length of the fracture zone. If this be so, this west zone had, at one stage, an appearance resembling that now seen at the East Zone. Unlike the East Zone, however, its ore potential lies in the fissure, exclusively, for the siliceous top, if it ever existed, has been removed by erosion. My proposal for exploring the West Zone will be discussed later.

Developed Ore

Exploration work done so far has produced information that permits speculation on "possible" ore, but only at the south end of the East Zone, has sufficient exploring been done to prove the ore. Even here, the ore has not been completely delineated.

Several holes, 56, 57, 58, 61, 62, and 64, did pass on through the ore and thus find its bottom near its southerly fringe. Other holes, 59, 60, 66, 73, 81, and 82 bottomed in ore, and thus did not establish the ore thickness at those points. We do have, though, 30,000 tons of proven ore of 45% to 50% grade in this south ore body. No speculative extensions, laterally or in depth, are included in this estimate.

Exploring done at the other two segments, the central outcrop and the northern outcrop, has been insufficient as a basis for tonnage estimate. Hole data does, however, indicate that the tenor of the ore is about the same as that in the south ore body. Likewise, there is no ore in the West Zone that can be considered as having been proven.

Proposed Additional Exploration

Our exploring with a wagon drill reveals, with no uncertanty, that the rock in the ore zone is a most incoherent mass. Crevices, cavities, and vugs, large and small, are the prevailing characteristics. The wagon drill, certainly, as we have learned, can not do a good job of drill-sampling such cavernous ground. Experienced drillers from the Boyler Bros. Drilling Company were reluctant to recommend, yes even opposed, any attempt at core drilling with a diamond bit. So, we have no choice but to conclude that any additional exploring by drill-sampling is just not practical. We are left, then, with the driving of adits (tunnels) as the only feasible method. Adits, driven for the sole purpose of exploring are, per unit of length, rather expensive but do give, as

compensation, superior information over drilling. Geology can be studied by direct observation and samples can be taken from a much larger and more representative portion.

You can expect the cavernous condition of the ground to give trouble in drilling and in loading blast holes in the adits. This is no mere matter of conjecture based on difficulties experienced in drill-sampling with the wagon drill, but from actual experience in attempting to drill and blast the outcrops. An air-leg mounted "jackhammer" with Sandvic-Coromant drill rods was used in drilling 15 to 20 holes. None of these holes could be put down beyond a depth of 3 to 4 feet. Drilling to even this shallow depth was a considerable struggle. Then, following the drilling, much time and no little patience was required to load dynamite into the hole. From this experience, it is my opinion that optimum progress will be had by using a three foot drill round. Rather poor breakage may be expected, even with this short round, because of dissipation of blasting energy into the cavities. Working under these difficulties, a two man crew, even with good equipment, will have to hustle to maintain an average advance of three feet per shift in a 5 by 7 foot heading. The cost per foot will, therefore, be expensive. Even so, the geological probabilities for a large quantity of ore justify the expenditure for exploration.

I am proposing six adits (tunnels), which should, even though they penetrate the ore zone at moderate depth, rather thoroughly explore the upper portion of the ore zone. Four of

these, adits, A, B, C, and E, are layed out so as to crosscut the ore structure of the East Zone. Adit, D, is layed out, drift fashion to penetrate the ore body known to exist near the south end of the East Zone. The horizon chosen will place it below the bottom of your drill holes. Furthermore, it will extend beyond the area explored by drilling and thus serve to prospect new ground out under the hard, silicous cap. Some crosscutting should be done from adit, D, to explore the width of the ore. Adit, F, is layed out as a drift on the West Zone structure. Here, too, some crosscutting would seem advisable.

These proposed adits are shown in plan on map No. 3 and in elevation, where the adit fits the section, on section map No. 6. Of the six proposed adits, F, only, now has an access road over which equipment and supplies can be moved easily. The road to, A and B, needs improvement. Access roads to, C, D, and E, will be new construction.

Since the purpose of these access roads is to serve the exploration work, a minimum of expense should be put into their construction, and yet have a road over which small trucks can move loads of equipment, water, etc. They will be along the hill side where, in this area, the mantle of soil is but one or two feet thick. Therefore, considerable drilling and blasting of rock will be required in providing a desirable grade width (8 to 10 feet). Your air compressor and rock drill, that will be on the job for the driving of the adits, can be used in the road construction. The grading can be done with your, D-C, bulldozer-equipped, caterpillar tractor. The four access roads

will require the construction of approximately, 1050 feet of road. The road to adits, A and B, 340 feet, is a matter of improvement of the existing roadway, but the "turn-around" area at the cabin should be enlarged. If this is done, the cost per foot of length for this whole task should be about the same as for the construction of the new roads. The approximate position of these proposed access roads is shown on map No. 3.

Suggestions on the Driving of the Adits

The width and height dimensions of the adits should be large enough to provide for optimum working conditions during their construction. A mucking machine, Eimco-212 or similar size, can work conveniently in a heading that is five feet wide by seven feet high. These dimensions are adequate for all of the other elements of the work, also, so I suggest that the adit be of this size. The drilling of blast holes is expected, for the reasons given earlier, to be a difficult and lengthy task. I believe, therefore, that you should provide a mucking machine for loading the broken rock, for it will hasten that element of the work and thus leave a larger part of the shift for drilling. Too, modern miners are unaccustomed to heavy hand mucking assignments. None of the proposed adits are very long so the rock can be moved out by hand tramming. The track can be removed from each adit as soon as the adit is completed and will, therefore, be available throughout the job. Twelve pound rail is sufficiently heavy for the tramming section of track, but lengths of twenty pound rail must be used under the mucking machine at the heading. Two hand tram-size mine cars will be needed for the tramming. Your, 315 cu. ft. per minute, air compressor unit has sufficient capacity

to furnish power for an Eimco-512 or similar size mucking machine. It, too, will be needed on the job. Water, to be used with the rock drills and in the wetting of muck piles, must be hauled from Grantsville. One-hundred gallons, or so, should be plenty to meet the requirements of one day, therefore, it is my suggestion that the crew use a pickup truck for their transportation and take several barrels of water with them each day as they travel to the job site. A pressure tank having a capacity of 50 to 100 gallons or more is needed to provide a pressure-storage source for the drilling water. Pipe, about 500 feet of each size; 2 inch for compressed air, 3/4 inch for water, is essential. Approximately one-thousand feet of twelve pound rail, with the appropriate quantity of track ties must be available for the track. Ventilating equipment, eight inch diameter or larger ventilating pipe, a fan and a motor, should be available, also. Rock drills, air-legs, hoses, and line-oilers are necessary. A variety of small tools; picks, shovels, hammers, saws, pipe dies, wrenches, forging equipment, rock bit grinder, etc., will be needed.

The property is approximately twenty-five miles from Gabbs. You will, therefore, meet with considerable expense in the mobilization and demobilization of crew and equipment. Haulage of supplies and the travel of a supervisor (supervisor-engineer-geologist) will mean considerable vehicle expense. The crew should not attempt to travel, daily, to and from Gabbs. If they do not, living facilities must be found for them elsewhere. The buildings in Grantsville, all of which are unoccupied, have possibilities. Two of these, if they can be rented from the owners and given some repair, repair broken windows and the like,

could house the crew. In any event you must anticipate some expense in the providing of living space and a sheltered shop near the work site.

Sampling and Assaying

The whole purpose of the exploration work is to discover and delineate ore. Your work so far has removed many uncertainties and considerably reduced the risk factor. In fact, your venture on the Chicago Lode-Allied ground has been successful so far. The geological possibilities are encouraging and indicate that additional exploring should be done. This additional exploring, like that already done, must include much sampling and assaying. At this stage in the exploring, all of the samples taken should be assayed for their $Ca\ F_2$ content. Some of the samples, one in ten perhaps, should be assayed for the $Si\ O_2$ and the total carbonates content. The exploring by adit program, that I have proposed, could produce as many as, 240 samples for $Ca\ F_2$ assay and, employing the ratio mentioned above, 24 to be assayed for $Si\ O_2$ and carbonates.

A grab sample should be taken as each round is being mucked out. The mining crew can, and must, do this as a regular and essential part of their work. Then, the muck pile sample, after being crushed and split, can be combined with others, much as was done with the drill samples, to make a composite for assay. Later, some sampling of the adit walls will undoubtedly be advisable. The 240 samples should obtain the desired information on the quality of the rock penetrated by the adits.

Conclusions

The geological potential of the Chicago Lode-Allied group, as evaluated from a study of the surface conditions and from information gained in the exploratory drilling done so far, seems excellent. The conditions of ore occurrence are such that the ore bodies could and should be of a size, attitude and grade that would permit profitable mining. Part of one ore body has been fairly well delineated by exploration. But, much more exploring must be done before you will have sufficient proven ore to justify the construction of a mill.

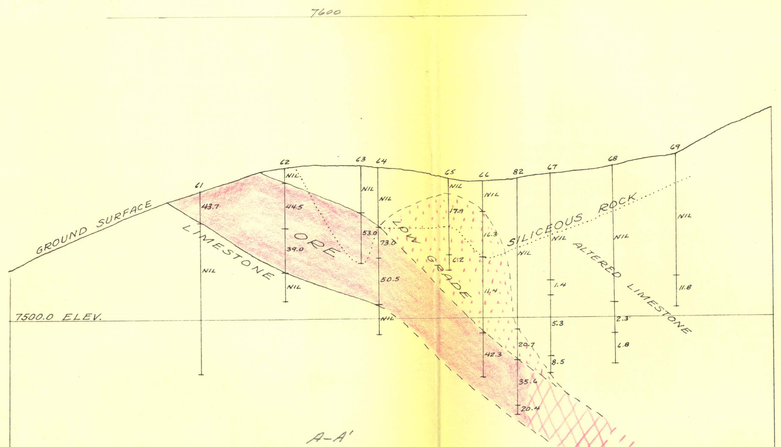
Exploration by drill, from the lessons learned on the ground, appears to be impractical. I, therefore, am proposing that a program of exploring by the driving of adits be undertaken. The program that I propose calls for six adits having an aggregate length of, 1460 feet.

Respectfully submitted,

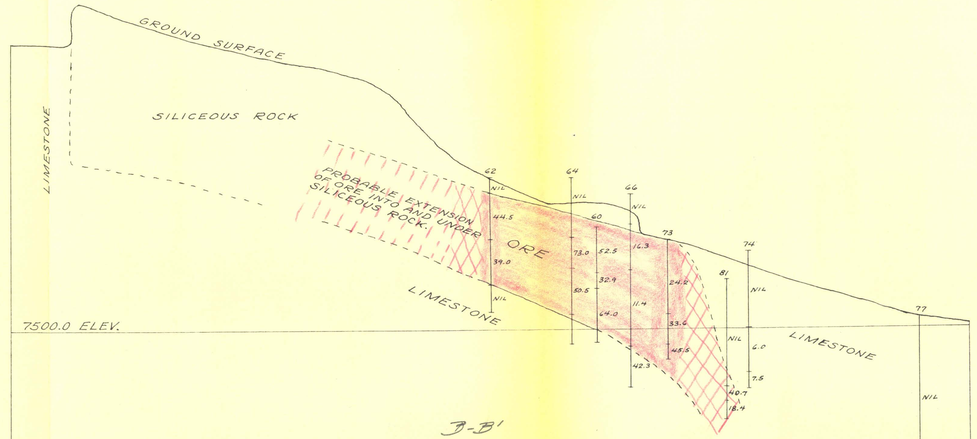
Bernard York

Bernard York
Nevada Registered Engineer, No. 161.

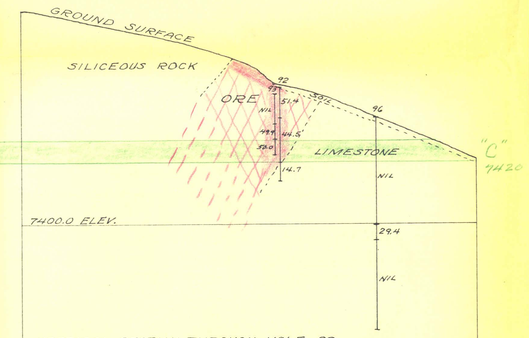
Mina, Nevada
March 30, 1959



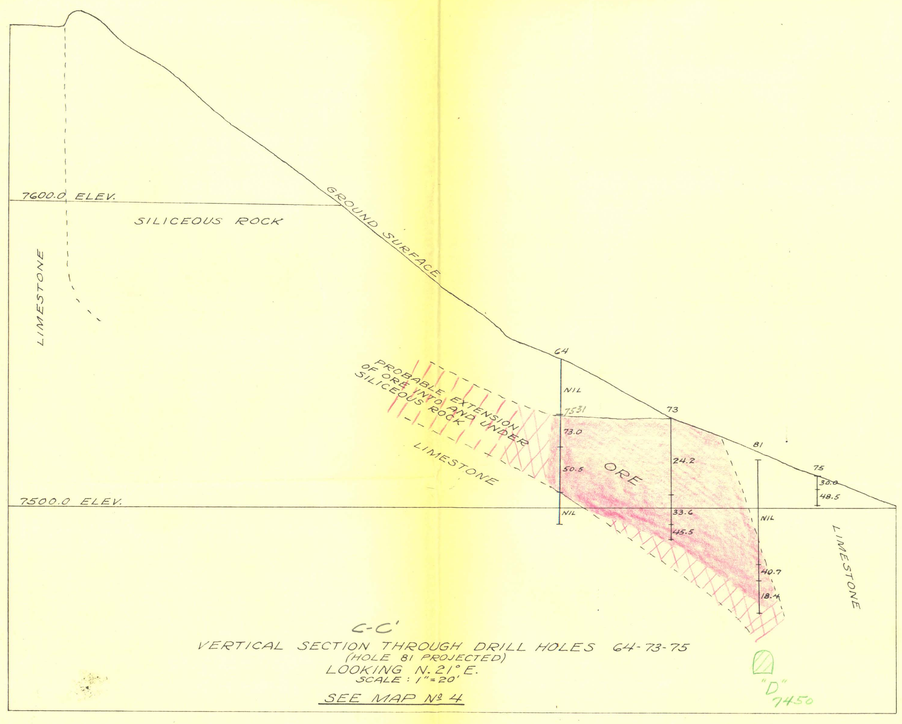
A-A'
VERTICAL SECTION THROUGH DRILL HOLES 61-69
LOOKING, N.65°W.
SCALE: 1"=20'
SEE MAP Nº 4



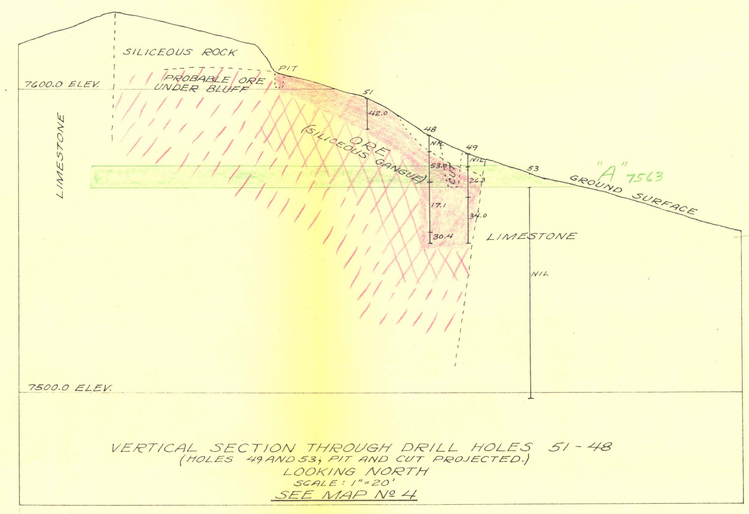
B-B'
VERTICAL SECTION THROUGH DRILL HOLES 62-73
(HOLES 60, 64, 66, 74, 77, AND 81 PROJECTED TO SECTION)
LOOKING, N.22°W.
SCALE: 1"=20'
SEE MAP Nº 4



VERTICAL SECTION THROUGH HOLE 92
(HOLES 93 AND 96 PROJECTED TO SECTION)
LOOKING NORTH
SCALE: 1"=20'
SEE MAP Nº 5



C-C'
VERTICAL SECTION THROUGH DRILL HOLES 64-73-75
(HOLE 81 PROJECTED)
LOOKING N.21°E.
SCALE: 1"=20'
SEE MAP Nº 4

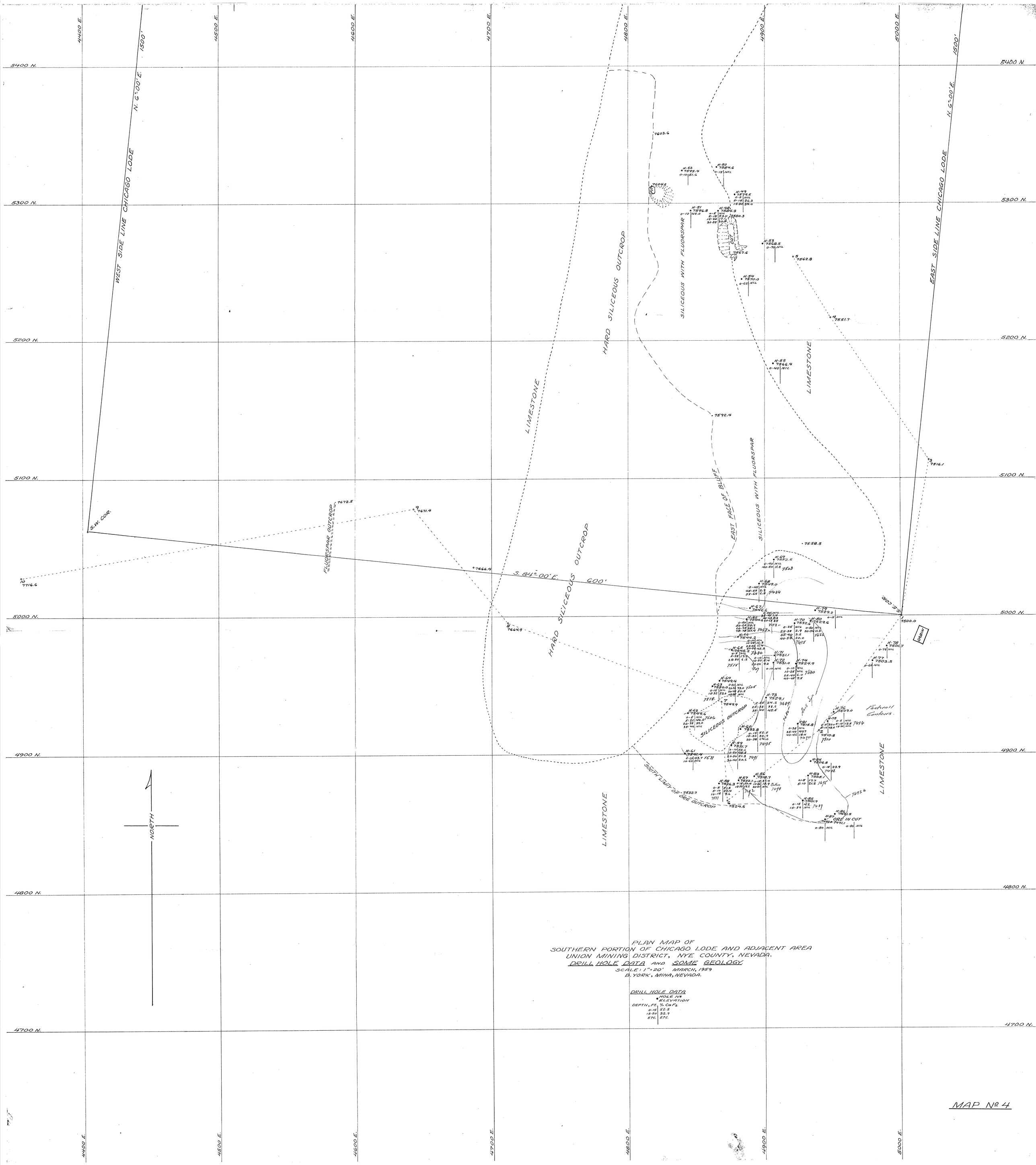


VERTICAL SECTION THROUGH DRILL HOLES 51-48
(HOLES 49 AND 53, PIT AND CUT PROJECTED.)
LOOKING NORTH
SCALE: 1"=20'
SEE MAP Nº 4

ORE
PROBABLE ORE
POSSIBLE ORE
LOW-GRADE
PROPOSED ADIT

VERTICAL SECTIONS
CHICAGO LODE AREA
UNION MINING DISTRICT, NYE COUNTY, NEVADA.
MARCH, 1959
B. YORK, MINA, NEV.

MAP Nº 6



PLAN MAP OF
SOUTHERN PORTION OF CHICAGO LODE AND ADJACENT AREA
UNION MINING DISTRICT, NYE COUNTY, NEVADA.
DRILL HOLE DATA AND SOME GEOLOGY.
SCALE: 1" = 20' MARCH, 1959
B. YORK, MINA, NEVADA.

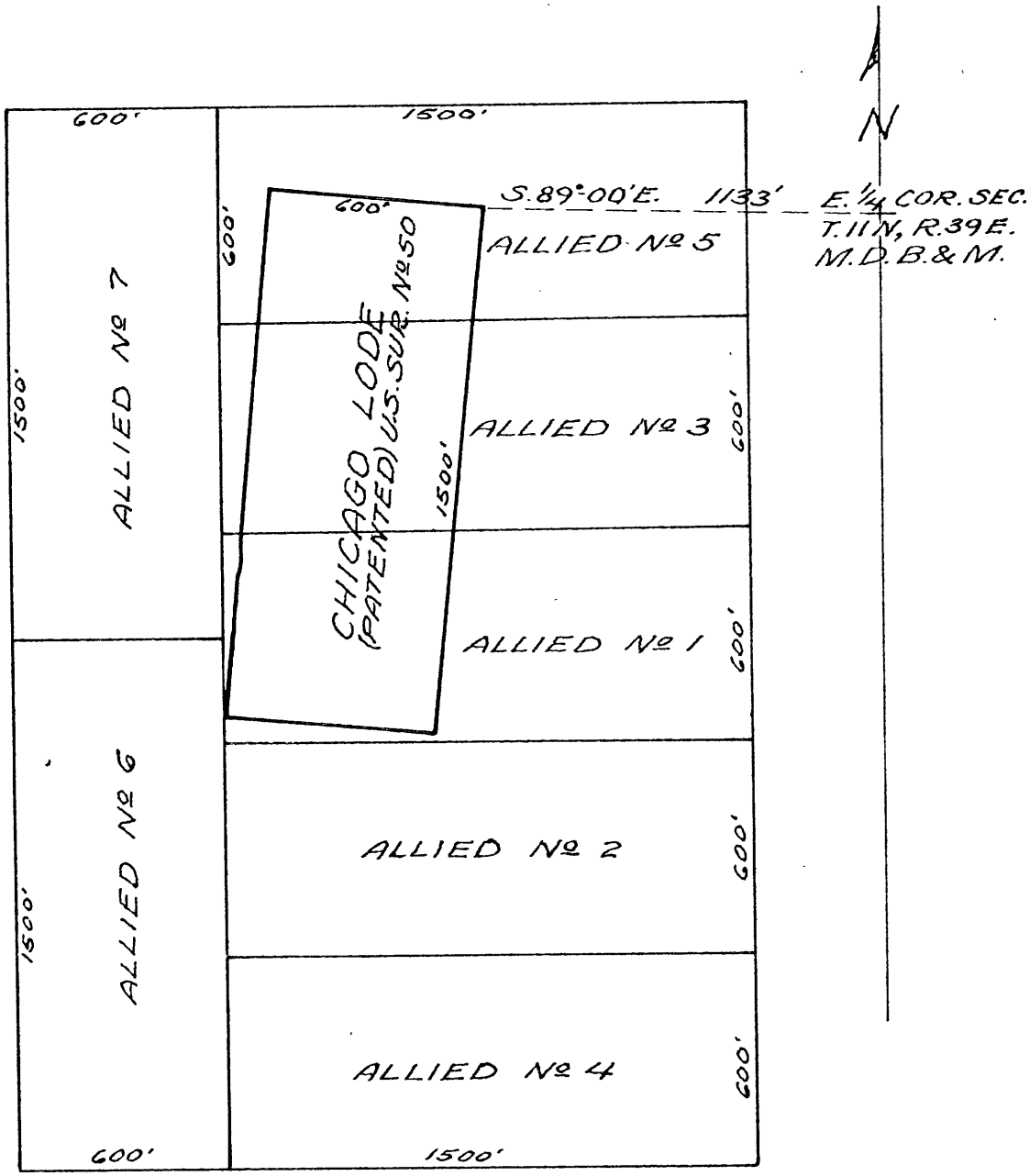
DRILL HOLE DATA

	• HOLE NO. ELEVATION
DEPTH, FT.	% CaF_2
0-15	52.5
15-20	32.7
ETC.	ETC.

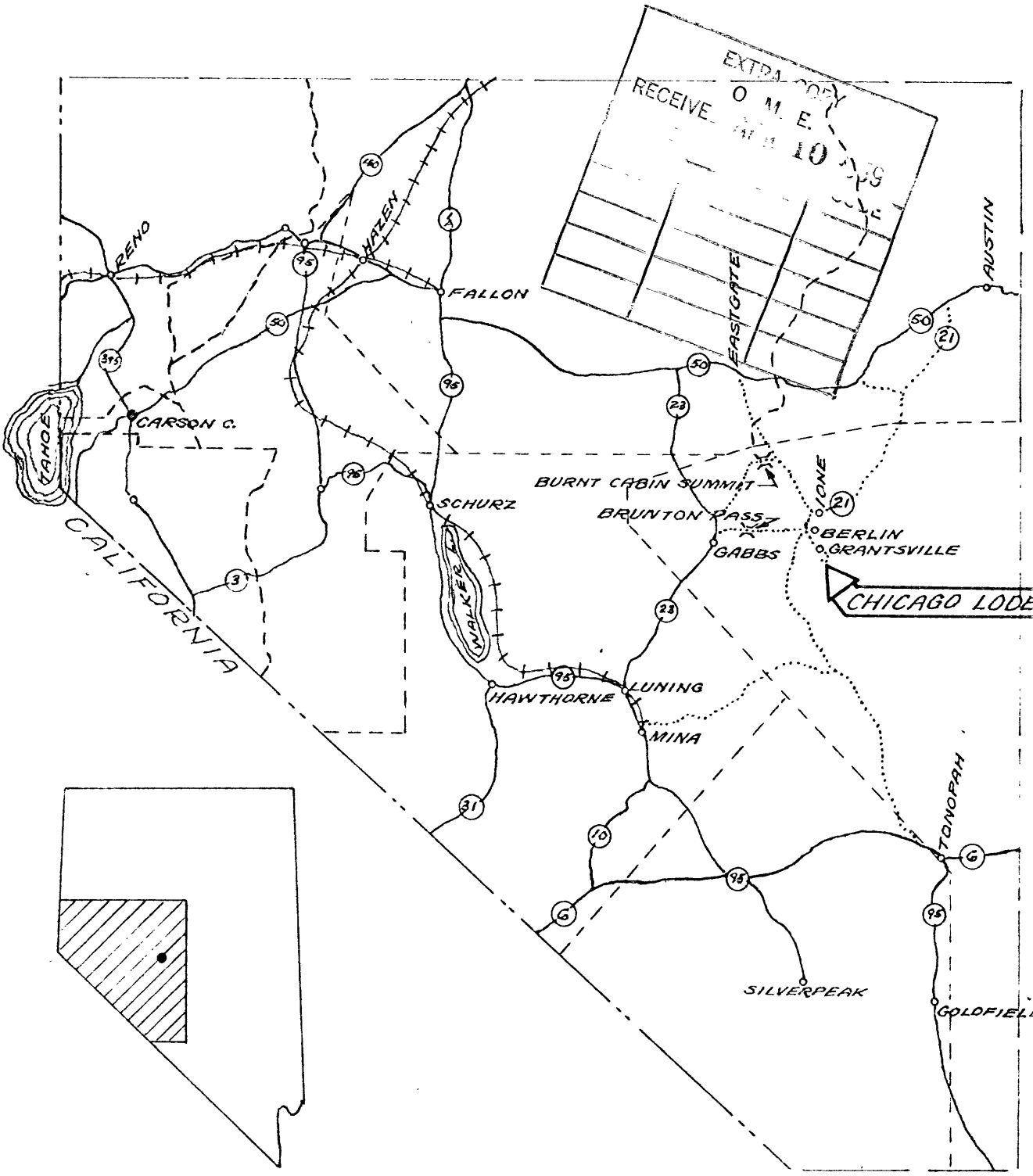
MAP No 4

CHICAGO LODE AND THE ALLIED GROUP OF LODE CLAIMS
UNION MINING DISTRICT
NYE COUNTY, NEVADA.
SCALE: 1" = 500' MARCH 6, 1959
B. YORK MINA, NEV.

ALLIED claims plotted according to description by Roy C. Ames, locator.



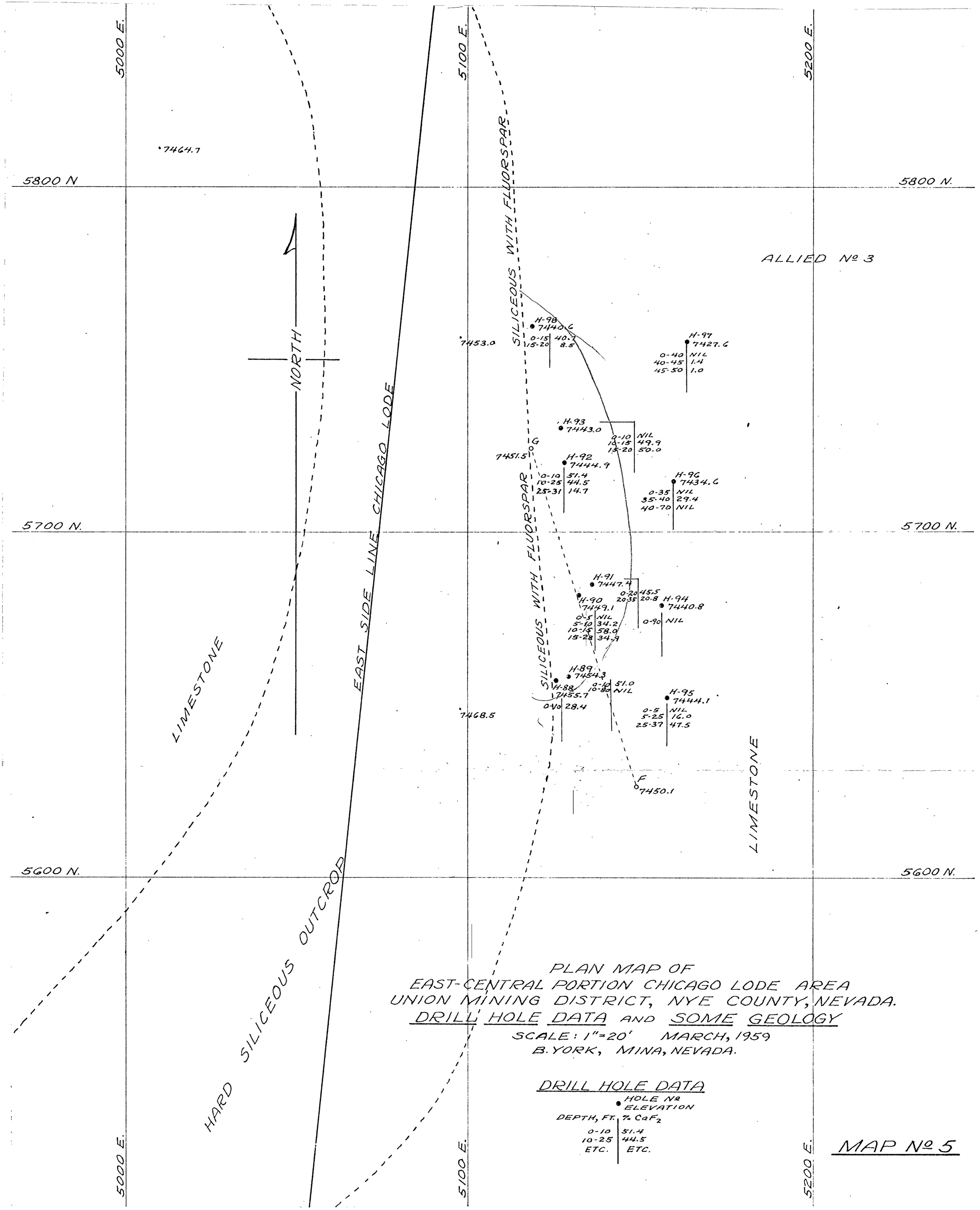
MAP Nº 2



U.S. and STATE HIGHWAYS, HARD-SURFACED ROADS, IMPROVED DIRT
SOUTHERN PACIFIC RAILWAYS

Location of CHICAGO LODE and ALLIED LODE CLAIMS.
NYE COUNTY, NEVADA.
B.Y. 3-9-59

MAP N



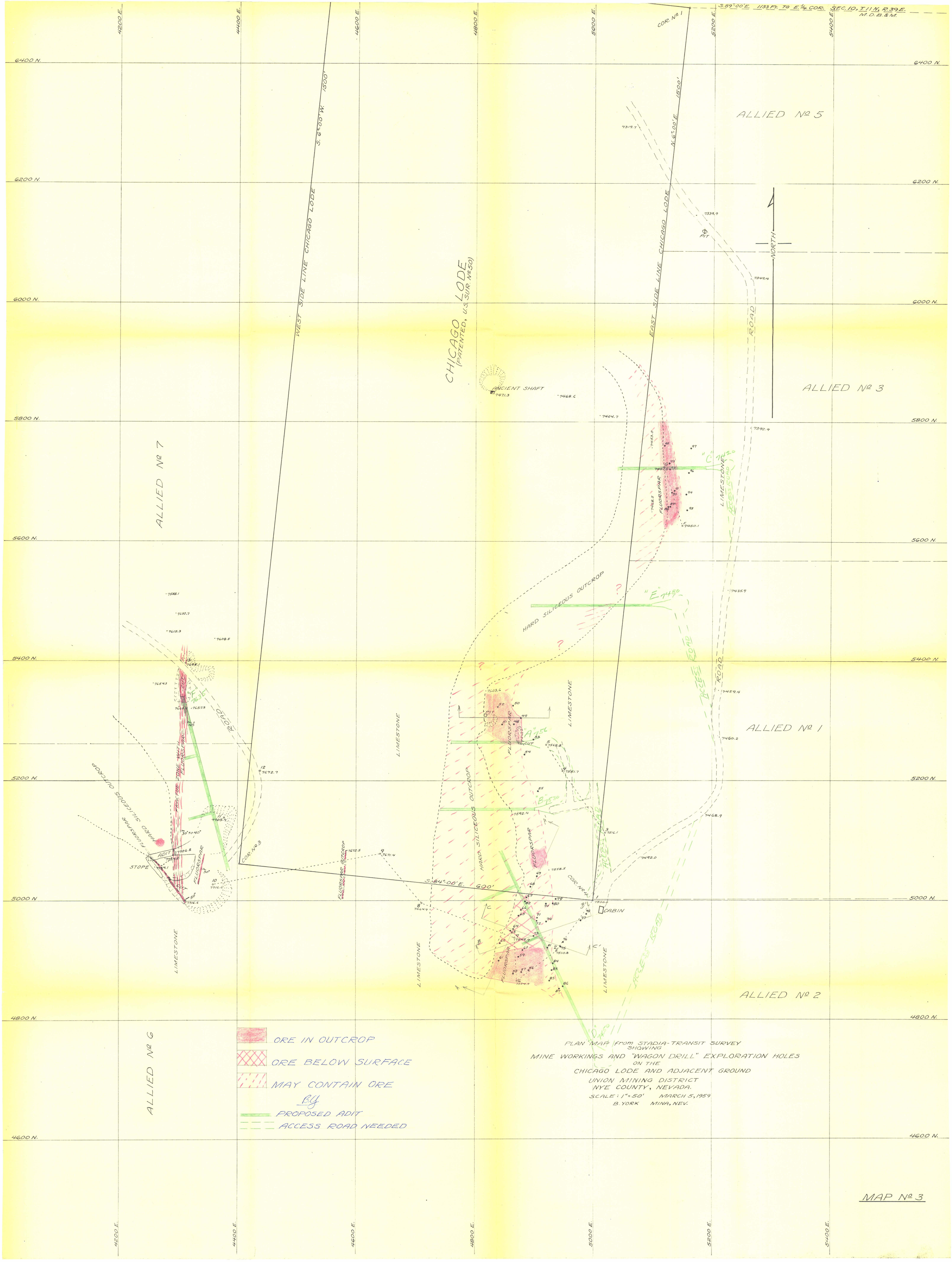
PLAN MAP OF
EAST-CENTRAL PORTION CHICAGO LODE AREA
UNION MINING DISTRICT, NYE COUNTY, NEVADA.
DRILL HOLE DATA AND SOME GEOLOGY
SCALE: 1"=20' MARCH, 1959
B. YORK, MINA, NEVADA.

DRILL HOLE DATA

• HOLE Nº
ELEVATION

DEPTH, FT.	% CaF_2
0-10	51.4
10-25	44.5
ETC.	ETC.

MAP Nº 5


S.89°-00'E. 1133 FT. TO E.1/4 COR. SEC.10, T.11 N., R.39 E. M.D.B.&M.
COR. Nº 1
S. 6°-00' W. 1500'
N. 6°-00' E. 1500'
WEST SIDE LINE CHICAGO LODE
EAST SIDE LINE CHICAGO LODE
CHICAGO LODE (PATENTED, U.S. SUR. Nº 50)
ALLIED Nº 5
ALLIED Nº 3
ALLIED Nº 7
ALLIED Nº 1
ALLIED Nº 2
ALLIED Nº 6
ANCIENT SHAFT
PIT
NORTH
ROAD
ACCESS ROAD
LIMESTONE
FLUORSPAR
HARD SILICEOUS OUTCROP
"C" 7420
"E" 7480
"A" 7560
"B" 7530
"F" 7630
ADIT
STOPE
CABIN
COR. Nº 3
COR. Nº 4
S. 84°-00' E. 600'
ORE IN OUTCROP
ORE BELOW SURFACE
MAY CONTAIN ORE
PROPOSED ADIT
ACCESS ROAD NEEDED
PLAN MAP from STADIA-TRANSIT SURVEY SHOWING
MINE WORKINGS AND "WAGON DRILL" EXPLORATION HOLES
ON THE
CHICAGO LODE AND ADJACENT GROUND
UNION MINING DISTRICT
NYE COUNTY, NEVADA.
SCALE: 1" = 50'
MARCH 5, 1959
B. YORK MINA, NEV.
MAP Nº 3