DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE Idm-E NO._____ DMEA NO. 4979

Application
- [x] Denied
- [ ] Withdrawn

Contract
- [ ] Terminated - Not Certified
- [ ] Terminated - Certified
- [ ] Cancelled
- [ ] Royalty Agreement

The records contained in this file are marked (x) and arranged in this order:

Folder No. 1:

Left Side

- [ ] Royalty Audits
- [ ] Certification of Discovery
- [ ] Closing Letter
- [ ] Cost Audits
- [ ] Termination Notice or Agreement
- [ ] Recision Notice
- [ ] Assignment of Contract
- [ ] Contract Amendments
- [ ] Contract with all exhibits and annexes
- [ ] Owner's Consent to Lien and Subordination Agreement
- [x] Application and attachments

Right Side

- [x] Project summary (final)
- [ ] Work Completed analysis (final)

All other material filed in chronological order including the following reports if checked:

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Final Field Team Report (Tab)
- [ ] Operator's Final Report (Tab)
- [ ] Interim Field Team Reports
- [ ] Operator's monthly reports and all attachments
- [x] On-site Exam Report (Tab)
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

Left Side

Folders No._____: Reports
- [ ] Analysis of Semi-Annual Inspection Reports
- [ ] Project Summary (Interim) by DMEA Engineers

Right Side

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Field Team Interim Reports
- [ ] Operator's Monthly Reports with transmittal, narrative and maps.

Folders No._____: Maps (Use pocket folder or envelope)

Folders No._____: Settlement Sheets

Folders No._____: Drill Logs

Folders No._____: Royalty material

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OFFICE ... DMEA
RECEIVED 10 1958
4/11 WSM 400

224 New Customhouse
Denver 2, Colorado
April 7, 1958

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Manganese) Magdalena Mining and Milling Company (Black Goose and Mangum claims) Socorro County, New Mexico

Enclosed are the original and one copy of the subject application in the amount of $142,490.00.

Because of the approaching end of the fiscal year and contrary to the general instructions, we are distributing the four copies of this application as follows:

Two copies to you
One copy to Tucson
One copy for our files.

See letter of Apr 7 on other side of docket under acknowledgment WSM 4/22/58

The Tucson Office is being instructed to review this application immediately and if approval of exploration is indicated, to make a field examination and report at an early date.

We find this procedure is necessary to expedite processing of applications received during the next few weeks to enable us to make our reports available to you in time to prepare contracts on applications to be approved.

E. N. Harshman

E. N. Harshman

Form MF–103
Revised Oct. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Budget Bureau No. 42–R1035.3
Approval expires June 30, 1958

RECEIVED
APR 10 1958
DMEA

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER I, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

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

Magdalena Mining and Milling Company
1260 Simms Street
Lakewood, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
APR 4 - 1958
REGION III
DENVER, COLORADO

APPLICANT NOT TO USE THIS BLOCK

Docket Number: DMEA-4979
Date Received: 4-10-58
Government Participation %:
Region: III
Division Code: 400

BUSINESS ORGANIZATION (Check one)

- Individual ☐
- Corporation ☐
- Partnership ☐
- Other (Specify) ☐

State in which firm is organized: Colorado

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

Name	Address	Title
W. R. Jones	3200 So. Dexter Denver, Colorado	President
R. M. Conrad	Magdalena, New Mexico	Vice-President
J. C. Capen	4901 W. 29th Ave. Denver, Colorado	Sec.-Treasurer

Mineral(s) for which you wish to explore: Manganese

Estimated Cost of Project: $142,490.00

LOCATION OF PROPERTY

Name	County	State
Black Goose & Mangum Claims	Socorro	New Mexico

GENERAL INSTRUCTIONS

Before filling out this application, please read DMEA Order–I, Revised, "Government Aid in Defense Exploration Projects." 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 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. 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 2(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 Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA 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.

4/4/58
Dated

W. R. Jones
BY *(Signature)*

President
Title

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

INFORMATION REQUIRED WITH THIS APPLICATION

1. *Applicant's Property Rights:*

(a) 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 land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

(b) State all the names by which you know the property.

(c) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise. If you are not the owner, submit with this application one exact copy of the lease, contract, or other document (with address of owner) under which you control the property.

(d) Describe all liens, mortgages, or other encumbrances on the property.

2. *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 lands, including existing mine workings. Describe all production facilities.

(b) State your interest, if any, in operations stated in 2*(a)*.

(c) State, as far as 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 on the property giving quantities and grades and sampling methods used, supporting 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 may have, indicating on each whether you require its return to you.

3. *Accessibility of Project:*

(a) To aid DMEA representatives who may be required to examine the property, state the name and address of the person who will meet the DMEA representative; give directions for reaching the property; and describe accessibility of the property including the mine workings.

(b) Name the shipping and supply points and places where employees reside and state the distances between them and the property.

4. *The Exploration Project:*

(a) Describe fully the proposed exploration project giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and longitudinal and cross sections as necessary. Show the 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 *property boundaries* or to the closest identifiable corner.

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

(c) In the event that an exploration contract with DMEA is executed, how soon will the work start and how many months will be required to complete it? State your anticipated average daily or monthly rate of progress for each type of work.

5. *Experience:*

State your operating experience and background with relation to your ability to carry out this exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of Costs:*

Furnish detailed estimates of the costs *for each item of the work proposed in 4(a)* under the headings listed below with a total for each heading and the estimated total cost of the project. Costs for any work to be performed by an independent contractor should be shown separately under category *(a)* below. Costs for any work that is not to be performed by an independent contractor should be given in detail under categories *(b)* through *(g)*.

(a) Independent contracts. State the cost of any proposed independent contract for the performance of all or any part of the work, expressed in units of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, 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. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

(c) Operating materials and supplies. List items of material and supplies with their cost. 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 operating equipment to be used giving specifications and indicating how each item is to be acquired – i.e., rented, purchased, or provided by the applicant. If it is rented or purchased, state the estimated rental or purchase price. If it is to be furnished by the applicant, give its present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of necessary *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 on the exploration project.

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

(g) Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(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 – No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. *(a)* State whether you are prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order–I, Revised.

(b) Explain to what extent you propose to furnish your share of the costs by providing money, by use of equipment owned by you, or otherwise.

* * * * *

INT.-DUP. SEC., WASH., D.C. 25960

[illegible]

[illegible] exploration [illegible]

1. [illegible]

(a) [illegible] Lring and [illegible] Quarry controls [illegible] in Socorro County, [illegible] 10 miles south of [illegible], [illegible] consisting of the [illegible] Lake (1[illegible]ha, 24 [illegible], the [illegible], [illegible], and the [illegible], [illegible] acres of [illegible] land.

See Exhibit 1 attached.

CENTRAL FILE COPY
DMEA
RECEIVED [illegible] 10 1958
DATE [illegible]

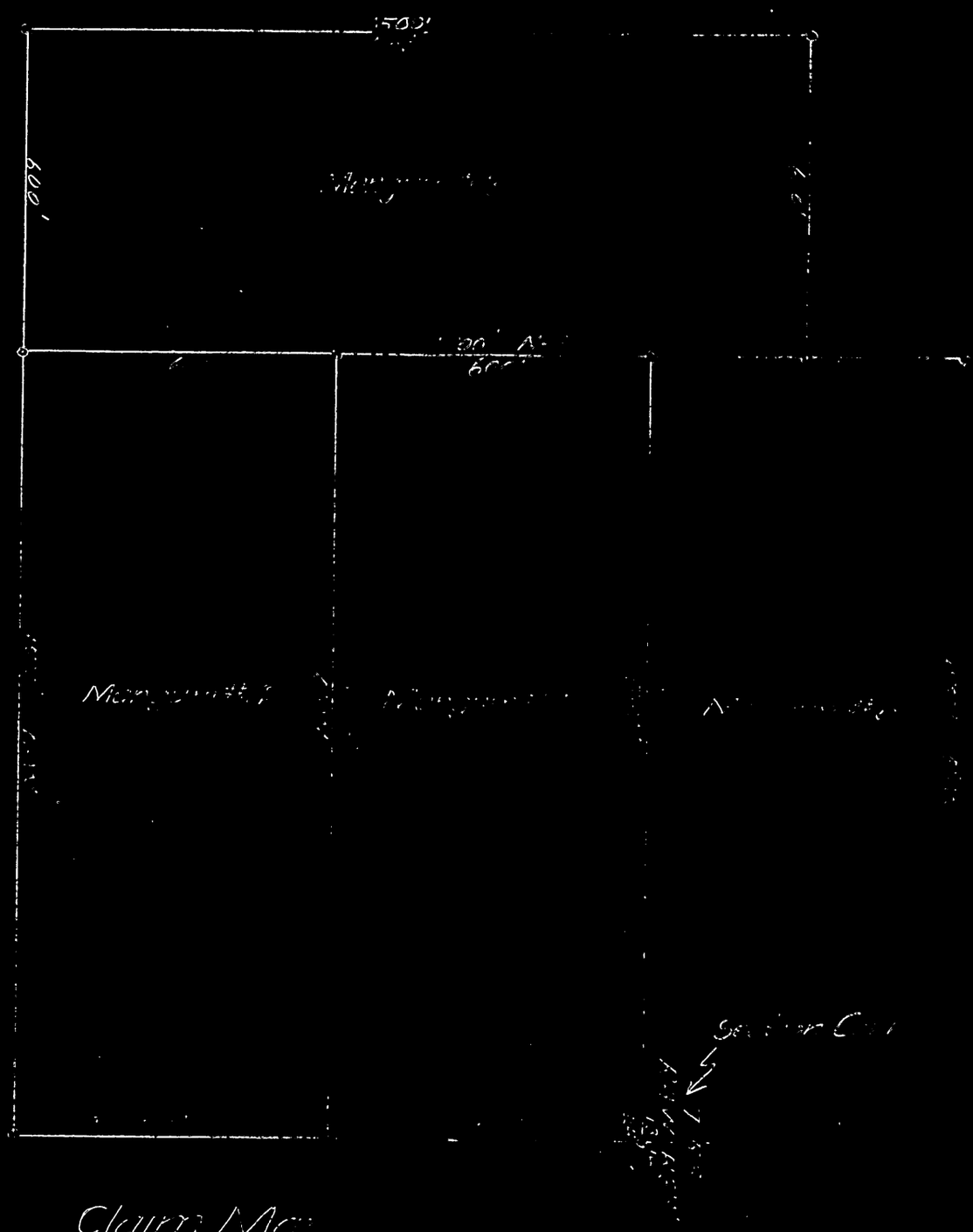
OFFICIAL FILE COPY
DMEA
RECEIVED APR 10 1958
DATE | INITIAL | CODE

EXHIBIT #1

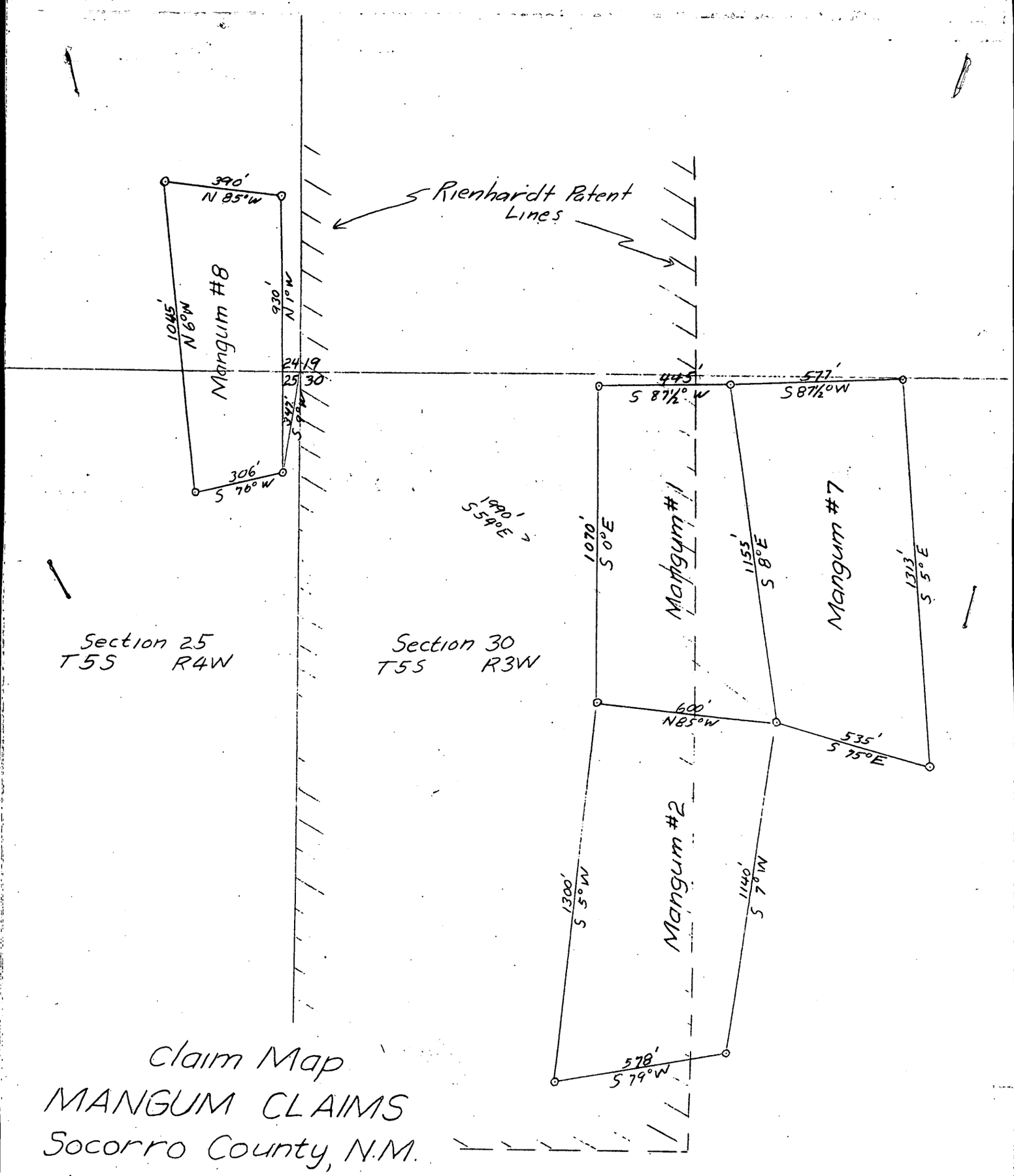
Property	Location	Area	Royalty	Purchase Price
Black Goose Claims	T4S, R4W Sec. 27, 34, and 35	280 Acres	10%	$75,000.00
Mangum Claims	T5S, R3W, Sec. 30, and T5S, R4W, Sec. 13 & 24	132 Acres	10%	$10,000.00
Weston Lease	T5S, R3W W½ SW¼ Sec. 19 W½NW¼ Sec. 30	162.1 Acres	10%	**********

Plan of the various properties listed on previous page are shown on Exhibits 2, 3, and 4 attached.

ORIGINAL FILE COPY
DATE
RECEIVED OCT 10 1978



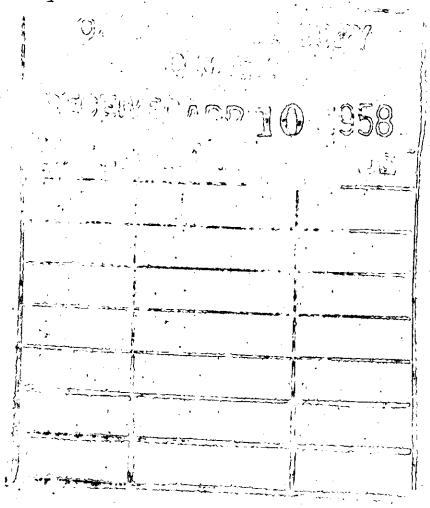
Claim Map
MAGNESIUM CLAIMS
Scale 1 in. 300 ft.



Claim Map
MANGUM CLAIMS
Socorro County, N.M.
Scale: 1 in. = 400 ft. By R.M. Conrad

SPECIAL FILE COPY
DMA
RECEIVED APR 10 1958
DATE

Affidavit verifying establishment of complete contemplated owners and posting of amended notices of location upon unpatented mining claims recorded in the Socorro County Courthouse, Socorro County, New Mexico is attached as Exhibit 5.



SECURITY TITLE ABSTRACT COMPANY

R. M. Conrad
re
Mangum 1-2-3-4-5-6-7-8

Black Goose 1-2-3-4-5-6-7-8-9-10-11-12-13-14

Instrument AFFIDAVIT

Con.

Dated July 19, 1956

Filed for Record July 19, 1956

Recorded in Book of Mining Locations

No. 188 *Page* 66

AFFIDAVIT VERIFYING ESTABLISHMENT OF REQUIRED MONUMENTED CORNERS AND THE POSTING OF AMENDED NOTICES OF LOCATION UPON UNPATENTED MINING CLAIMS.

STATE OF NEW MEXICO)
) SS
COUNTY OF SOCORRO)

R. M. Conrad being first duly sworn, upon his oath deposes and says: That he is an agent and employee of the C. V. Miller Co. of 2040 S. Navajo Street, Denver 8, Colorado, on whose behalf he did survey and post each and all of the following named and recorded unpatented Mining Claims in Socorro County, New Mexico, to-wit:

MANGUM NO. 1, located April 30, 1951, recorded at Book 156, page 250.
MANGUM NO. 2, located Apr. 30, 1951, recorded at Book 156, page 252-3
MANGUM NO. 3, Located May 18, 1951, recorded in Book 156, page 264
MANGUM NO. 4, Located May 18, 1951, recorded in Book 156, page 265
MANGUM NO. 5, Located May 18, 1951, recorded in Book 156, page 265-6
MANGUM NO. 6, Located May 18, 1951, recorded in Book 156, page 266
MANGUM No. 7, Located Nov. 15, 1951, recorded in Book 156, page 365
MANGUM No. 8, Located May 1, 1952, recorded in Book 156, page 395-6

BLACK GOOSE, Located June 27, 1949, recorded in Bk. 138, Page 694
BLACK GOOSE #2, Located Feb. 26, 1951, recorded in Bk. 156, page 233-34
BLACK GOOSE #3, Located July 15, 1950, recorded in Bk. 156, page 185-6
BLACK GOOSE #4, Located Feb. 26, 1951, recorded in Bk 156, page 232-3
BLACK GOOSE #5, Located July 30, 1950, recorded in Bk. 156, page 186
BLACK GOOSE #6, Located Nov. 9, 1950, recorded in Bk. 156, page 212-3
BLACK GOOSE #7, Located Mar. 18, 1951, recorded in Bk. 156, page 241.
BLACK GOOSE #8, Located Apr. 7, 1951, recorded Bk. 156, page 241.
BLACK GOOSE #9, Located July 8, 1955, recorded Bk. 177, page 210
BLACK GOOSE #10, located Jul. 8, 1955, recorded Bk. 177-page 210-11

Affidavit, Book 188, page 66; continued #2.

BLACK GOOSE #11, located Jul. 8, 1955, recorded Bk. 177, page 211
BLACK GOOSE #12, located Jul. 8, 1955, recorded Bk. 177, page 211-12
BLACK GOOSE #13, located Jul. 8, 1955, recorded Bk. 177, page 212
BLACK GOOSE #14, located Jul. 8, 1955, recorded Bk. 177, page 212-13.

AFFIANT further states that he did personally run out the actual survey lines of each and all of the aforesaid claims; that he did himslef and under his personal supervision erect or had erected the monuments marking each corner for each and all of the aforesaid unpatented mining claims and all such corners are duly monumented and marked to a heigth of not less than four feet above the ground as required by law; that a plat of survey of the aforesaid claims has been prepared and a copy of same has been filed by affiant in the County Clerk's office of the County of Socorro, at the County court house in Socorro, New Mexico.

R. M. Conrad

Sworn and subscribed to before me this 19th day of July, 1956.

(SEAL)

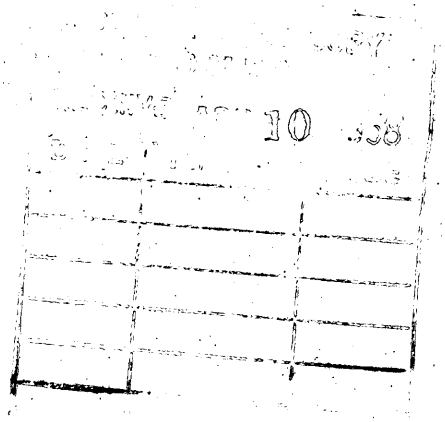
Julius C. Sanchez
Notary Public Socorro County

My Comm; Expires:
July 12, 1957

(b) The properties under the control of [illegible] Mining and Milling Co. have been in fact the ones listed in the preceding substitute exhibit.

(c) All of the property is under lease with the option to purchase except the [illegible] lease, which is patented land, royalty payments to be [illegible] of the value of the ore mined or a minimum royalty payment of [illegible] per month, whichever is the greater. Refer to Exhibit 1.

Copies of the lease agreements of the above mentioned properties are attached. Exhibit 6 is the original lease agreement. Exhibit 6A is the transfer from C. H. Miller of this lease to [illegible] Mining and Milling Company, and Exhibit 7 which is self-explanatory.



CITY TITLE ABSTRACT COMPANY

OFFICIAL FILE COPY
DMEA
RECEIVED 10-6-58
DATE

Lee E. Logan
Duane Mangum, and
Paul H. Fewell

and

C. V. Miller Co. Mining Division

Instrument Mining Lease

Con.

Dated August 26, 1955

Filed for Record August 27, 1955

Recorded in Book of Miscellaneous Record

No. 173 *Page* 286-

MINING LEASE

THIS INDENTURE, Made this 26th day of August in the year of our Lord one thousand nine hundred and fifty-five between Lee E. Logan, Duane Mangum, and Paul H. Fewell of the first part, and C. V. Miller Co. Mining Division party of the second part, WITNESSETH, that the said parties of the first part, for and in consideration of the rents covenants and agreements hereinafter expressed to be paid, kept and performed by the said party of the second part have leased, let and demised, and by these presents does lease, let and demise unto the said party of the second part, the following described premises, situate, lying and being in Mining District, in the County of Socorro and State of New Mexico, to-wit:

Black Goose Claims numbers 1 thru 14, incl.
All the above described claims are situated approximately 15 miles south of Magdalena, New Mexico, and 2 miles south of Baldy Mountain.

Mangum claims numbers 1 thru 8, incl.
All these above claims are situated approximately 20 miles south of Magdalena, New Mexico.

TO HAVE AND TO HOLD THE SAME, for the purpose of mining, for the term of To depletion from the date hereof, unless sooner terminated under any of the provisions herein contained with power to assign this lease or any interest thereunder, or to sublet the whole or any part of said premises.

And the said party of the second part, for and in consideration of the leasing of said premises, covenants and agrees with said parties of the first part to commence work on said premises within 21 days of signing of final agreement with large bulldozer and thereafter to work the same continously in a thorough and workmanlike manner, and working at least _____ shifts each calender month; drained and clear of loose rock and rubbish; to keep accurate accounts, and to render monthly statements to the said parties of the first part their agent or attorney, showing the amount and character work done and truck counts from the two groups of claim_ and to pay to said parties of the first part, their agent, or attorney, as rental for said premises royalty upon all ore taken and sold therefrom as follows, to-wit:

10% of all monies from sale of ores from the above leased properties Sixty days after the signing of final agreement the party of the second part will pay a minimum of three hundred dollars ($300) per month to the [illegible] first year. All payments made prior to production will be [illegible] royalty payments on sale of ores.

Purchase price for Black Goose Group $75,000.00 Royalty payments to apply 15% to purchase price.

Mining Lease, Book 173 - pages 286-7, continued #2.

Purchase price to mangum group. $10,000.00. Royalty payments to apply 100% to purchase price.

And the said party of the second part furthermore covenants and agrees that the said parties of the first part, their agent of attorney, shall have the right at any and all times to enter upon and descend into any and all parts of said premises to inspect the same, make surveys thereof, or take samples therefrom and that the said party of the second part will render to them all the assistance in their power in so doing. And the said party of the second part further more covenants and agrees to occupy and hold all side veins, spurs, feeders, cross-lodes, parallel lodes, or mineral deposits of any kind which may be discovered by the said party of the second part or by any person working under them in any manner, by working within the aforesaid premises, as the property of the said parties of the first part and as part of the premises demised, and to not allow any person not in privity with the parties hereto to take or hold possession of said premises or any part thereof under any pretense whatsoever, and to pay in due season all taxes and assessments levied against said demised premises on account of the production of ord under this lease.

All work necessary to maintain and hold these properties will be done by the party of the second part. Any ground open for location, of value, adjoining these properties located by either party will be included in this agreement.

And the said party of the second part furthermore covenants and agrees that in case he fails in any respect to keep and fulfill anyone or more of the covenant or agreements herein expressed or implied, then, and in that case It shall be lawful for the said partyie of the first part, their agent or attorney, to declare said term ended, and with or without process of law to enter upon and take possession of said premises, and in such case, and also at the expiration of this lease by limitation, said party of the second part agrees to surrender yield and deliver to said parties of the first part quiet and peceable possession of said premises in good condition, and that time shall be of the essence thereof, and that all of the covenants and agreements herein contained shall extend to and be binding upon the heirs, executors, administrators, successors, and lawful assigns of the respective parties hereto.

Reasonable time shall be allowed the party of the second part to remove all machinery and equipment installed by them.

IN WITNESS WHEREOF, The parties hereto have executed these presents the day and year first above written.

Mining Lease - Book 173, pages 286-7, continued #3.

Lee E. Logan (SEAL)

Duain Mangum (SEAL)

Paul H. Fewell (SEAL)

By Duain Mangum (SEAL)

C. V. Miller Co. (SEAL)

Boyd F. Dargh (SEAL)
Vice President

ATTEST:

"Name Not Ledgible"
Asst. Secy.

State of New Mexico)
COUNTY OF SOCORRO) ss

ON THIS 26th DAY OF AUGUST, 1955, BEFORE ME PERSONALLY APPEARED LEE E LOGAN AND DUAIN MANGUM, AND DUAIN MANGUM FOR PAUL H. FEWELL UNDER POWER OF ATTORNEY, TO ME KNOWN TO BE THE PERSONS DESCRIBED IN AND WHO EXECUTED THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME AS THEIR FREE ACT AND DEED.

WITNESS MY HAND AND SEAL THE DAY AND YEAR LAST ABOVE WRITTEN.

(SEAL)

Earl T. Scott
NOTARY PUBLIC

MY COMMISSION EXPIRES

1-22-59

STATE OF NEW MEXICO)
COUNTY OF SOCORRO) SS.

ON THIS 26 th DAY OF ~~OCTOBER~~ August ,1955 ,BEFORE ME PERSONALLY APPEARED LEE. E. LOGAN, AND DUAIN MANGUM, AND DUAIN MANGUM FOR PAUL H. FENELL UNDER POWER OF ATTORNEY,TO ME KNOWN TO BE THE PERSONS DESCRIBED IN AND WHO EXECUTED THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME AS THEIR FREE ACT AND DEED.

WITNESS MY HAND AND SEAL THE DAY AND YEAR LAST ABOVE WRITTEN .

Earl L. Scott
NOTARY PUBLIC

MY COMMISSION EXPIRES 1-22-59

DMEA
RECEIVED APR 10 1956
DATE | INITIALS | CODE

ASSIGNMENT

In consideration of Ten Dollars and other good and valuable consideration, receipt of which is hereby acknowledged, the undersigned, C.V. Miller Co., a corporation, and party of the second part of the foregoing lease, does hereby assign all its right, title and interest in the foregoing lease to Magdalena Mining and Milling Co., a corporation, this 13th day of March , 1956.

C. V. MILLER CO.

By C V Miller Pres.

Attest: [illegible]

STATE OF COLORADO,)
) ss.
CITY AND COUNTY OF DENVER,)

On this 6th day of September, 1956, before me appeared C V Miller to me personally known, who, being by me duly sworn did say that he is President of the corporation, C. V. Miller Co., and that the seal affixed to the above Assignment is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors and said C V Miller acknowledged said instrument to be the free act and deed of said corporation.

Notary Public

My Commission Expires: My Commission expires Jan. 27, 1959

MINING LEASE

FROM

Lee E. Logan and Duain Mangum, Executors of Paul H. Fenell

TO

C. V. Miller Co. - Liberty Division

STATE OF COLORADO, }ss.
County of.....

I hereby certify that this instrument was filed for record in my office, at.....o'clock.....M., on the.....day of....., A. D. 19....., and is duly recorded in book....., page.....

Recorder.

Deputy.

Fees, $.....

2-56 BRADFORD-ROBINSON PTG. CO., DENVER

And the said part y... of the second part furthermore covenant s... and agree s that the said parties of the first part, ... their ... agent or attorney, shall have the right at any and all times to enter upon and descend into any and all parts of said premises to inspect the same, make surveys thereof, or take samples therefrom, and that the said part y of the second part will render to them all the assistance in their power in so doing. And the said part y of the second part furthermore covenant s and agree s to occupy and hold all side veins, spurs, feeders, cross lodes, parallel lodes or mineral deposits of any kind which may be discovered by the said part y of the second part or by any person working under them in any manner by working within or from the aforesaid premises as the property of the said parties of the first part and as part of the premises demised, and to not allow any person not in privity with the parties hereto to take or hold possession of said premises or any part thereof under any pretense whatever, and to pay in due season all taxes and assessments levied against said demised premises on account of the production of ore under this lease.

The party of the second part assumes responsibility to carry insurance and in other ways to insure the parties of the first part against damage suits incurred by any mining operations.

The parties of the first part retains grazing rights on the leased ground in-so-far that there is no interference in mining operations and that the party of the second part are not responsible for injured stock.

And the said part y of the second part furthermore covenant s and agree s that in case it fails in any respect to keep and fulfill any one or more of the covenants or agreements herein expressed or implied, then, and in that case it shall be lawful for the said parties of the first part, their agent or attorney to declare said term ended, and with or without process of law to enter upon and take possession of said premises, and in such case, and also at the expiration of this lease by limitation, said part y of the second part agree s to surrender, yield and deliver to said parties of the first part quiet and peaceable possession of said premises in good condition, and that time shall be of the essence hereof, and that all of the covenants and agreements herein contained shall extend to and be binding upon the heirs, executors, administrators, successors and lawful assigns of the respective parties hereto.

[illegible] shall be allowed the party of the second part to [illegible] and equipment installed by them.

IN WITNESS WHEREOF, The parties hereto have executed these presents the day and year first above written.

DULY RECORDED
OCT 10 1929
AT 3 O'CLOCK

COPY
CMEA
RECEIVED APR 10 1958

DATE	INITIALS	CODE

No. 90 MINING LEASE—Short Form. Bradford Robinson Ptg. Co., Mfrs. Robinson's Legal Blanks, 1824 to 1836 St. Denver

THIS INDENTURE, Made this

in the year of our Lord one thousand nine hundred and

between [illegible] Hester and Gene Verne [illegible], husband and wife,

[illegible] and Faye Eisenhardt, husband and wife,

of the first part, and Magdalena Mining and Milling Company

of the second part, WITNESSETH, that the said part[illegible] of the first part, for and in consideration of the rents, covenants and agreements hereinafter expressed to be paid, kept and performed by the said part[illegible] of the second part, have leased, let and demised, and by these presents do lease, let and demise unto the said part[illegible] of the second part, the following described [illegible] Mining District, in the County of [illegible]

[illegible] and 4, Section [illegible] and Lots [illegible] and [illegible] South, Range 3 West [illegible]

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TO HAVE AND TO HOLD THE SAME, for the purpose of mining for the term of

[illegible] not so under-lease [illegible] any of the [illegible] to assign this lease or any interest therein, or to sublet the whole or any part [illegible] except upon the written consent of the part[illegible] of the first part.

[illegible] of the second part [illegible] of the second part [illegible] of the first part [illegible]

[illegible]

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The addresses of the owners of the properties under lease and lease with option to purchase are as follows:

Mr. Tunin Mangun
Box 205
Magdalena, New Mexico

Mr. H. A. Nienhardt
Box 325
Truth or Consequence, New Mexico

(d) A Title Search has been made on the properties under lease and lease with option, based on these the Company Attorneys' have concurred that the title is clear. Thus there are no encumbrances against the properties.

2. Physical Description:

(a) Reference is made to maps and photostats listed later in this report as to the exploration work that has been done on the property.

(b) All of the work above described has been done by Magdalena Mining and Milling Company with the following exceptions:

All location work and required assessment work prior to the time the Company acquired the leases.

A small pit was opened up by Charles Marret of the Black Goose Claim #1 in 1953.

(c) Approximately 40 tons of ore was shipped to Deming, New Mexico from the Black Goose Claim #1 by Mr. Charles Marret under the Government Ore-buying Program for low-grade Manganese ore in 1953. Copies of the settlement sheets are not available to us. However, the shipment was acceptable under the Buying Program, therefore, proving the ore was amenable to upgrading to meet the specification of the Government Car-lot Program.

(d) All of the exploratory work done to date on the properties controlled by the Company has been performed on surface outcrops, consisting of benching by bulldozers and shallow percussion drilling. Metalurgical tests have proven that these areas exposed can

be undertaken to produce a marketable manganese concentrate. Therefore, this application for funds is being made to finance the exploration of these areas for continuity of the zone in depth.

(e) The manganese properties controlled by the Magdalena Mining and Milling Company lie on the west flank of the Magdalena Mountains, between 10 and 15 miles south of the town of Magdalena, New Mexico. Fourteen unpatented claim blocks, known as the Black Bear Group, are in the Cibola National Forest. Eight unpatented mining claims, known as the Langum Claims, lie on public domain five miles to the south of the Black Bear Group.

The manganese deposits of this area invariably are found in faulted and sheared zones in intrusive rhyolites. In the case of the outcrops explored on Magdalena Mining and Milling Company's property, they lie in a zone running approximately N 20 W to S 20 E. This zone is close and roughly parallel to the western edge of the rhyolitic intrusive which apparently forms the basement rock of the Magdalena Mountains. Magmatic solutions rising through the shattered zones in the rhyolite deposited manganese in the form of the mineral rhodonite as a cementing agent in the fractures.

The Company contr ls several miles along t is fractured zone. The Company has c ncentrated most of its exploratory work to date in one limited area on the Black Goose 1 Claim. Limited exploratory work has been done on five additional areas, and, in each case, apparent commercial manganese ore bodies have been exposed.

(f) Based on the exploration work done to date on the properties controlled by the Company, all evidence points to the presence of a large commercial ore-body of manganese. Extensive metallurgical tests have been made for the Company by the Research Foundation, Colorado School of Mines, Golden, Colorado on representative grab samples taken from the exploratory benches cut on the Black Goose, Sangum and Weston properties. These tests have proven that the ore thus exposed is amenable to up-grading producing a marketable concentrate containing well over 40% Mn.

These tests prove that a concentrate can be made which would have a chemical analysis of 45% Manganese, 1.7% Iron, 0.097% Phosphorus, 0.17% Copper, 0.20% Lead, 0.06% Zinc, 7.03% Silica, and 1.23% Alumina.

Exhibits 8, 9, and 10 are attached hereto.

The first area we propose to further explore is the Black Goose Claim 1. To date we have exposed most of the ore zone by bulldozing. There has been two cross-cuts blasted out across the outcrop. In addition, we have drilled and collected the cuttings for 133 - 6' percussion drill holes. These cuttings from the drill holes were crushed and assayed as shown on Exhibit 11 attached.

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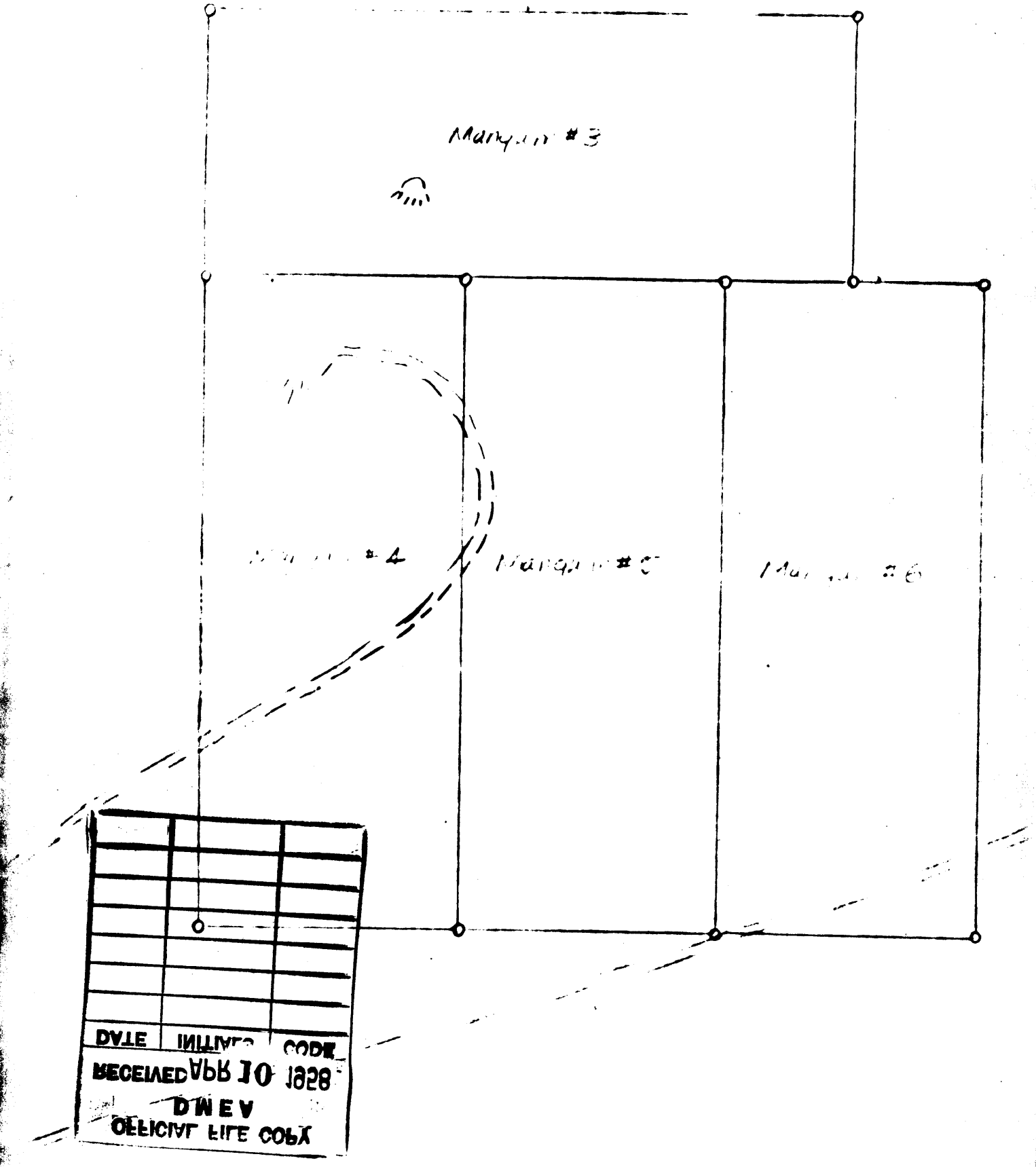

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MANGUM CLAIMS

Roads

Dump

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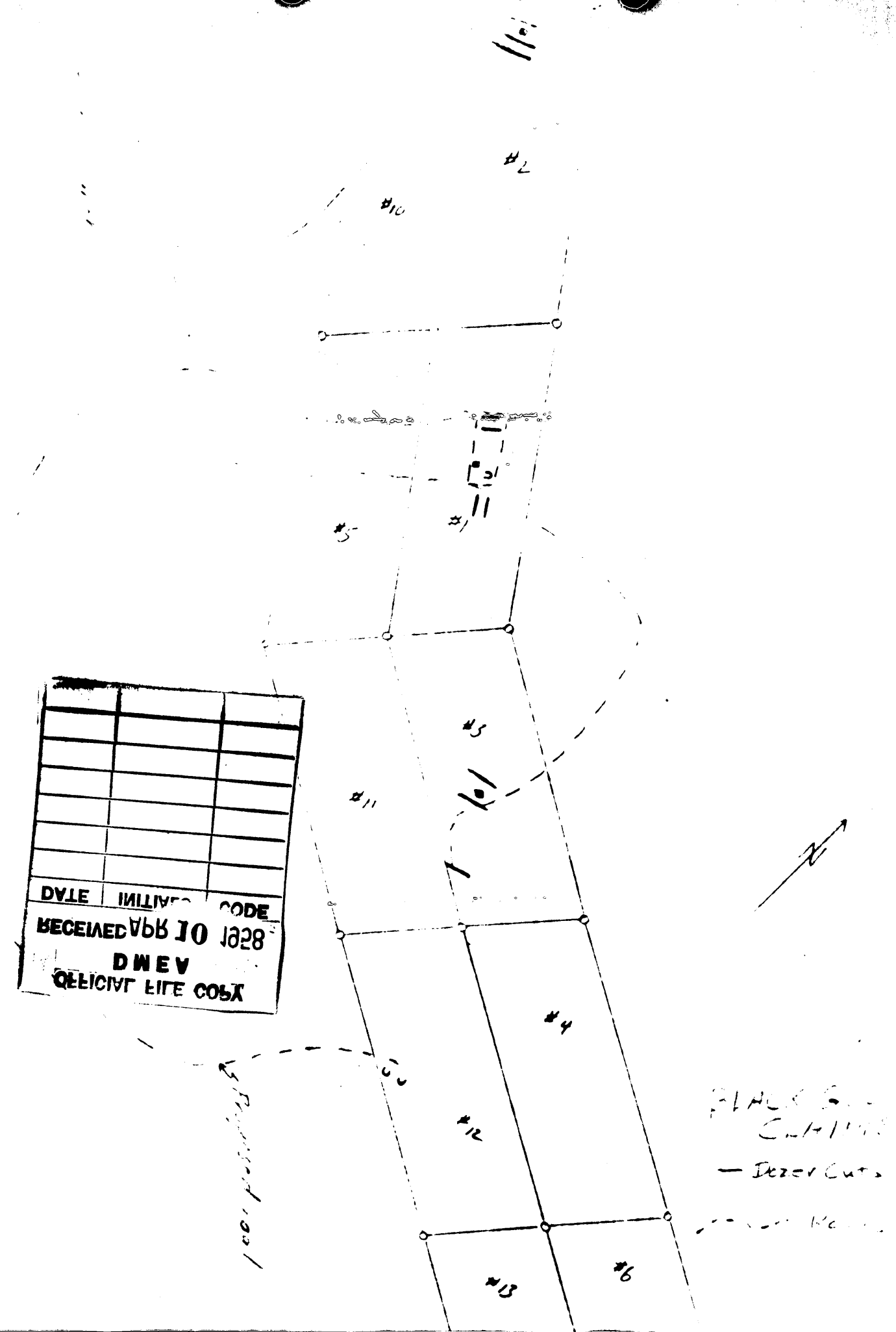
CLAIMS

Work

Dozer Cuts



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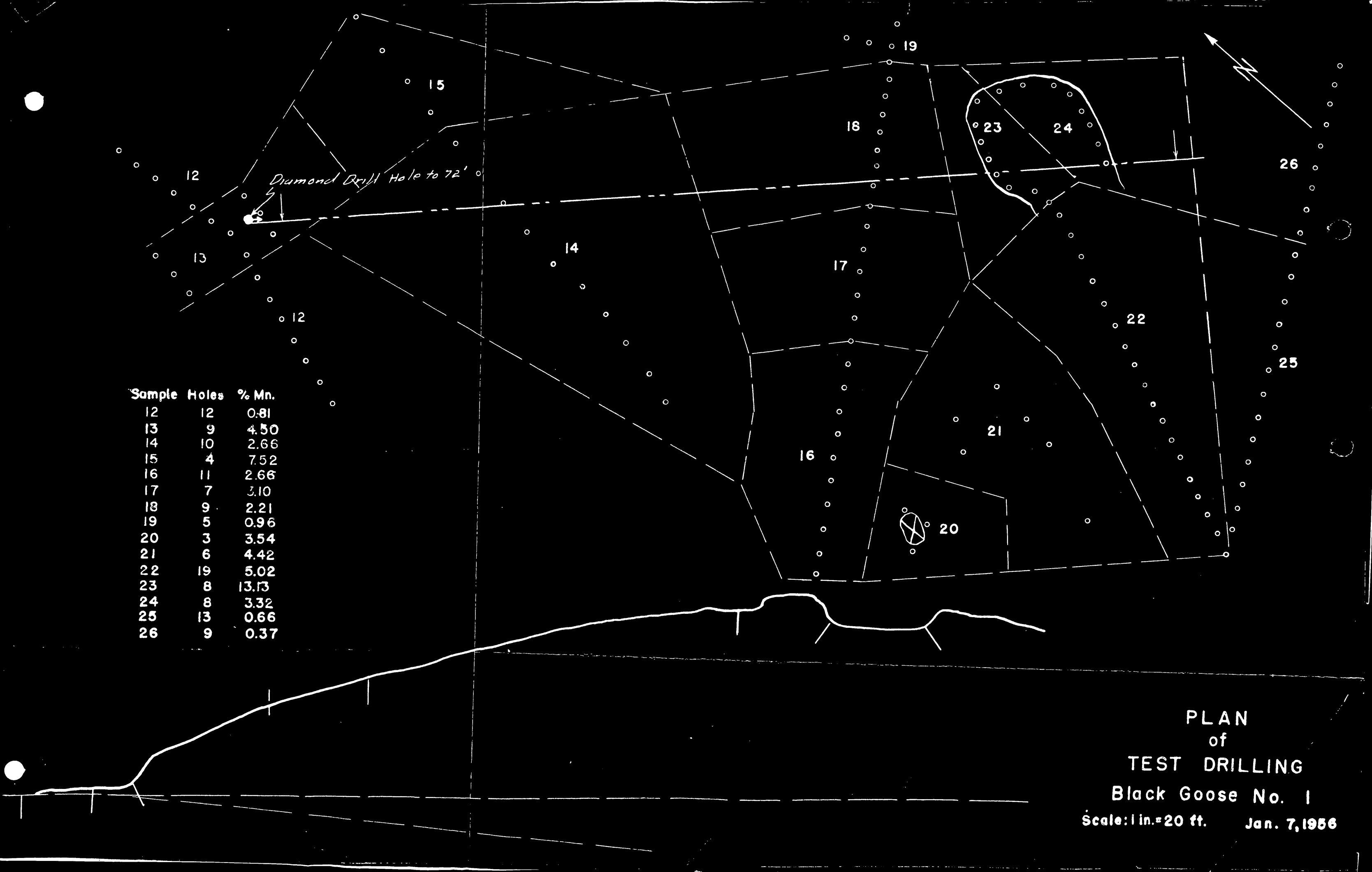

Sample	Holes	% Mn.
12	12	0.81
13	9	4.50
14	10	2.66
15	4	7.52
16	11	2.66
17	7	3.10
18	9	2.21
19	5	0.96
20	3	3.54
21	6	4.42
22	19	5.02
23	8	13.13
24	8	3.32
25	13	0.66
26	9	0.37

PLAN
of
TEST DRILLING
Black Goose No. 1

Scale: 1 in. = 20 ft. Jan. 7, 1956

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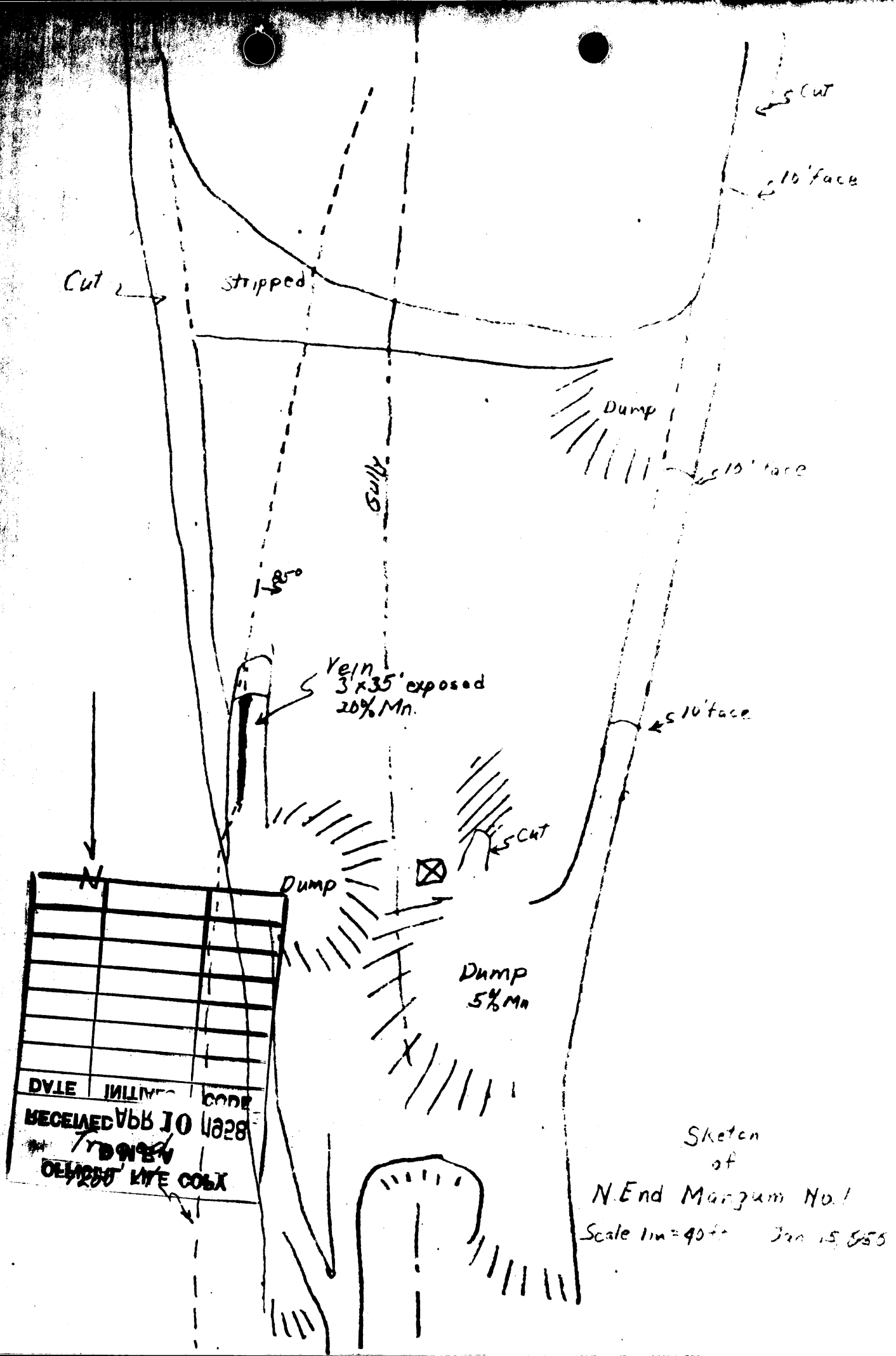
An attempt was made to core drill vertically in the clear zone which is the ore body. Core recovery was entirely unsatisfactory due to the nature of this deposit. Although the slug recovered showed friable manganese present to a depth of 20' at this point the drilling was discontinued.

The second area we propose to further explore is on the Marquam Hill Lode and the Keston Lease. A fissure vein of manganese has been traced for a distance of 1200' on the surface. At the southern end of this fissure vein, the outcrop is found in conjunction with a massive lower grade deposit of manganese.

The exploratory work done to date consists of excavation of a cut 20' long by 20' deep on the vein. Hand vein material sorted out of the excavated material assayed 3 .1% manganese. In this same area, three 10' benches were bulldozed out in the lower grade area.

Details of the above mentioned work is shown on Exhibit 12.



Sketch
of
N. End Margum No. 1
Scale 1in = 40 ft Jan 15 1955

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The third area we propose to further explore is on the south end of the Magnum 1 Claim. This area contains an apparent massive deposit of manganese as an irregular vein deposit mentioned above.

Exploratory work done to date consists of a substantial amount of stripping by bulldozers. In addition to this were 20 - 6' percussion drill holes were put down. The cuttings from these holes were retained and grouped as to areas and assayed.

Details of the above described work are shown on Exhibit 13 attached.

Drilling Results

Sample	Holes	% Mn
29	3	8.48
27	8	1.11
28	4	1.18
30	2	0.81
31	2	1.55
32	6	0.99
33	2	4.28
34	4	1.55
35	3	0.66
36	3	2.29
37	14	0.81
38	3	1.11
39	4	5.60
40	3	3.54
41	6	2.50
42	1	5.57
43	2	5.46
44	3	3.32
45	2	0.66
46	3	0.87
47	2	1.42
48	2	6.86
49	6	1.55

PLAN
of
TEST DRILLING AND PITS
Mongum No. 1
Scale: 1 in. = 42 ft. Aug. 15, 1957

All the laboratory work done to determine the cross-section of the [illegible] was done by the Charles H. Tenker Laboratory, Denver, Colorado. A copy of their certified assay sheet is shown as Exhibit 2h.

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TELEPHONE MAin 1852

CHARLES O. PARKER & CO.

CHEMISTS • ASSAYERS • ENGINEERS

DENVER 2, COLORADO

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Folio 6709

Date Feb. 2, 1956

C. V. Miller,
Box 4279 So. Denver Station,
Denver, Colo.

We hereby Certify, that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	INSOLUBLE PER CENT	VALUE PER TON
	Manganese (Mn)							Manganese (Mn)
Sample No. 1	1.55%						Sample No. 32	0.89%
2	3.02%						33	4.28%
3	0.96%						34	1.55%
4	3.90%						35	0.66%
5	2.00%						36	2.29%
6	4.20%						37	0.81%
7	7.30%						38	1.11%
8	2.66%						39	5.60%
9	1.77%						40	3.54%
10	3.69%						41	2.50%
11	0.74%						42	5.53%
12	0.81%						43	5.46%
13	4.50%						44	3.12%
14	2.66%						45	0.66%
15	7.52%						46	0.89%
16	2.66%						47	1.92%
17	3.10%						48	6.86%
18	2.21%						49	1.55%
19	0.96%							
20	3.54%							
21	4.42%							
22	5.02%							
23	13.13%							
24	3.32%							
25	0.66%							
26	0.37%							
27	1.18%							
28	1.18%							
29	8.48%							
30	0.81%							
31	1.55%							

Gold at _____ per ounce Copper at _____ per unit

Silver at _____ per ounce Zinc at _____ per unit

Lead at _____ per unit

Charge $ 122.50

CHARLES O. PARKER & CO.
CHEMISTS, ASSAYERS and ENGINEERS

2. (g) A portion of Circular [illegible], published by the New Mexico Bureau of Mines describing similar manganese deposits in Socorro County, New Mexico, is shown as Exhibit 15.

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MANGANESE DEPOSITS

Location

Small manganese deposits are present throughout the area examined, but the largest deposits occur in the area underlain by the massive rhyolite (Tmr). Some deposits of commercial importance occur at Red Hill and in SE¼ and NE¼ sec. 12, T. 4 S., R. 2 W. The deposits at Red Hill are being mined by the Manganese Corporation of Arizona. The Gienera mine is located in SE¼ sec. 12, where a vein of psilomelane occurs. The vein averages about 1½ ft thick and 400-600 ft in length, with a proven stopping depth of about 80 ft. The Tower Mining Company is mining in NE¼ sec. 12, in an extensive zone of mineralized brecciated massive rhyolite. Most, if not all, of the other properties in the area have not passed beyond the prospecting or early development stage.

History and Production

Occurrences of manganese in the Luis Lopez manganese district have been known for a considerable time (Wells, 1918, pp 79-91). The first recorded production took place during World War I, when about 100 tons of sorted ore containing 35 percent manganese was produced from the area covered by the present Red Hill and Red Hill Extension claims (Neuschel, 1943). Most of this ore came from a now inaccessible incline on the Red Hill Extension No. 4 claim.

Major production from the Red Hill claims began in 1944, when the United Mining and Milling Company constructed a 300-ton mill on the property. Later, the mine and mill were sold to the Socorro Corporation, and subsequently to Southwest Minerals Industries. Late in 1950, after a short period of operation by the latter company, the mill was badly damaged by fire, and the mine was closed down. In 1954, the mine was leased to the Manganese Corporation of Arizona. Mining was recommenced, and a new, large capacity mill was erected. This company purchased the property in August 1955.

Complete production figures for the Red Hill area are not available, but Benjovsky (1946, p 4) quoted the following for the operations of the United Mining and Milling Company up to November 19, 1946:

1944. . . . . 180 tons of concentrates with 44% Mn
1945 . . . . . 3,500 tons of concentrates with 44-45% Mn
1946. . . . . 1,046 tons of concentrates with 45% Mn

Current production is variable. It is reported that more than 2,000 tons of ore per day is treated to yield a high-grade concentrate.

Development of other areas in the Luis Lopez manganese district was stepped up with the advent of the government purchasing program, in which premium prices are offered for manganese ores. Many new prospects were uncovered, and attempts were made to develop them; some of the older prospects were placed again in operation. The Tower and Gianera properties were developed under this program. The Tower mine is currently producing about 1,000 tons of low-grade (milling) ore per day. The Gianera mine is producing a small tonnage of high-grade ore per day. Previously, the only large-scale mining and milling operation in the area was the work on the Red Hill claims. Other deposits were being worked on a small scale with the object of recovering a product that easily could be handsorted into high-grade manganese ore. Although this type of mining is still going on, the Tower Mining Company and the Manganese Corporation of Arizona, the two largest producers in the area, are mining low-grade ores that are milled to yield a high-grade concentrate.

With the veto of the bill that would have extended the stockpiling program in August 1955, much of the prospecting in the area ceased. Only a few properties other than the producing mines mentioned are currently active.

Type of Deposits

All of the major manganese deposits discovered so far occur in breccia zones or steeply dipping fault zones in the massive rhyolite (Tmr) member of the volcanic sequence. Most of the faults and breccia zones have a general north to northwest trend, though some strike northeastward. The amount and direction of fault movement is generally indeterminate. The fault zones on the east side of the volcanic mass are normal faults that are downthrown on the east, following the general pattern of the faults bordering the Rio Grande depression. At many places, the amount of movement that caused the brecciation is not defined, though it is clearly not of great magnitude in some areas. Large quantities of commercial-grade (i.e., milling-grade or better) manganese ore are, in most cases, confined to fault-bounded blocks of brecciated rhyolite, with only very low-grade material outside these blocks.

Many small deposits containing manganese minerals in joints and small brecciated zones are located throughout the massive rhyolite and in the late rhyolite (Tlr) plug in the northwestern part of the area. One deposit, located along the contact between massive rhyolite and earlier rhyolite (Tbr) in the southeastern part of sec. 1, T. 4 S., R. 2 W., consists of a vein approximately 2 ft wide exposed vertically for a distance of 20 ft.

Reserves

Reserves of low-grade (milling) ore at the Tower and Manganese Corporation of Arizona properties probably are quite large, but no data for accurate estimates were available.

No estimate of the reserves of the Gianera property was made. Reserves of most other prospects are confined to such ore as may be in sight, as exploration has not progressed to the extent that reliable estimates can be made.

Mineralogy

The only prominent ore mineral in the Luis Lopez manganese district is a hard black manganese oxide identified as psilomelane from an X-ray powder diagram made by Dr. Ming-Shan Sun, of the New Mexico Bureau of Mines and Mineral Resources. The mineral occurs in massive or colloform layers or coatings on fragments of massive rhyolite in the brecciated zones. The layers may be as much as several inches thick, but more often the mineral is present only as a thin, paintlike film on the rhyolite fragments. Where the breccia fragments are closely spaced, several of the colloform layers may come together to yield a rather large mass of fairly pure manganese mineral. In most cases, the mineral has been deposited in open spaces. The manganese minerals apparently do not replace the country rock.

At some places, a felty black material is present on the surface of the hard black psilomelane. X-ray analysis of the felty material indicates that it also is composed chiefly of psilomelane, in spite of its marked resemblance to pyrolusite.

Black calcite is commonly present, but at most places is not nearly so abundant as the psilomelane. The vein in the southeastern part of sec. 1, T. 4 S., R. 2 W., however, is made up almost entirely of black calcite. In every case where the paragenetic relationships of the two minerals could be determined, the black calcite was younger. The calcite occurs in masses of crystals that are as much as one-half inch across and intimately intergrown. Dr. Brian Mason, formerly of Indiana University, made an X-ray analysis of the black residue obtained by leaching the black calcite with acetic acid. The residue is chiefly psilomelane.

Small irregularly shaped masses of a light-gray mineral with distinctive internal reflection were observed in polished sections of the black calcite. Although the masses were too small to be identified by etch tests, some were isolated and tested by microchemical methods. The potassium mercuric thiocyanate test described by Short (1940, p 187) showed the presence of zinc in repeated applications. Spectrographic analysis showed small amounts of zinc to be present in the residue obtained by leaching with acetic acid. It is thought that zinc-containing mineral is a carbonate, because of the fact that after the acetic acid leach it is present in the residue only in small amounts.

White, coarsely crystalline calcite is a prominent mineral in the manganese deposits. It is present commonly as massive crystal growths on masses of black calcite and as veinlets cutting masses of black calcite. From these relations, it is inferred that the white calcite is younger than the black calcite and, therefore, also younger than the psilomelane.

1 Inch

Plate 2

Manganese-bearing breccia from a point just east of the MCA mine. Thin, black coatings of manganese oxides surround the breccia fragments. At lower left, later calcite covers the manganese oxides. The gray cement is calcite and some silica, with scattered small fragments of ground-up rhyolite. At places in the breccia ore, the manganese coatings are as much as 4 in. thick.

Finely crystalline to microcrystalline milky-colored quartz occurs in the manganese deposits and is younger than the manganese minerals. Its relationship to the calcites could not be determined. The quartz is present as fillings of open spaces between fragments of massive rhyolite breccia and as a cement binding fragmental psilomelane and massive rhyolite. It is evident that some brecciation of the ores took place after the deposition of the manganese minerals and before the introduction of the quartz.

Barite also has been observed in the deposits. It is younger than psilomelane, but its relation to other minerals was not determined.

Origin of the Ores

The ores of the Luis Lopez manganese district are thought to be hydrothermal in origin. The mineralization does not appear to die out at shallow depth (some mining has been carried on as much as 200 ft below the outcrop), and ore occurs at various topographic levels. No systematic relation to the present topography is apparent. There is no known source from which descending solutions might have derived the manganese necessary for the formation of these deposits. It is possible that the ore-bearing solutions may have been warm emanations associated with the last stages of eruptive activity. The occurrences of psilomelane deposits in a brecciated plug of late rhyolite and a dike of late rhyolite are considered to be suggestive evidence in favor of the association of the hydrothermal solutions with a later eruptive epoch. The fact that some manganese mineralization occurs in the gravels of prebasalt and postlate rhyolite age also points to such a conclusion. It is possible that the ore-bearing solutions may have been associated with the eruption of the Quaternary basalt, but may not have been related to any specific eruptive event.

The brecciation and faulting associated with the ore deposits controlled the localization of the ore minerals. This brecciation and faulting must have taken place after the emplacement of the massive rhyolite, and probably also after the late rhyolite, though some of it may have been associated with the intrusion of the latter. Minor brecciation and fracturing of the ores indicates that movements continued in some areas after the mineralization took place.

Psilomelane is generally regarded as a supergene mineral (Palache, Berman, and Frondel, 1944). However, it is believed that the psilomelane deposits in the Luis Lopez manganese district are hypogene in origin. Both the psilomelane and the host rock are unleached and unweathered in most cases. There is no evidence that the psilomelane replaces any other mineral. On the contrary, psilomelane is the earliest deposited mineral in the deposits examined. One concludes, therefore, that although psilomelane often occurs as a supergene mineral, in these deposits it is hypogene.

The deposition of manganese from hot waters of a thermal spring near Delta, Utah, has been described by Callaghan (1939), who also cites other examples of manganese in thermal springs. Callaghan does not regard the spring as necessarily having an igneous source, but writes that such a source of manganese and barium cannot be eliminated.

The manganese deposits of the Talamantes district near Parral, Chihuahua, Mexico (Wilson and Rocha, 1948), bear a striking resemblance to the deposits in the Luis Lopez manganese district. There, manganese oxides, including psilomelane, cryptomelane, hollandite-cryptomelane, and coronadoite occur in brecciated zones along faults. Trask and Cabo (1948, pp 218-221) indicate that many deposits in Chihuahua and Sonora follow the same general structural and mineralization pattern. The mode of occurrence in the Talamantes district is described as follows (Wilson and Rocha, 1948, p 193):

> "Most of the manganese deposits of the Talamantes district occur in brecciated zones along faults. Manganese oxides occur as veinlets, irregular nodular bodies, and irregular masses surrounding rhyolite fragments of the breccia. About half of the volume of the breccia zones is composed of fragments of wall rock. The manganese oxides have filled open spaces and probably replaced the matrix of the breccia, but the rhyolite fragments show very little evidence of replacement. In many places narrow stringers of manganese oxide extend from the brecciated zones into the bordering wall rock. In some pieces fairly well defined veins of manganese oxide having definite walls occur along fissures not accompanied by breccia zones. These veins are much thinner, however, than the breccia deposits. . . .
>
> The faults along which the veins occur have dips ranging from vertical to 60° E. or W. The average strike is a few degrees west of north, but the strike ranges to slightly east of north."

The evidence, according to these writers (ibid., p 200), suggests that the deposits may be hypogene, but is insufficient to justify definite conclusions.

A situation in which manganese minerals are thought to have been deposited directly as oxides has been described by Park and Cox (1944, pp 316-317) in the Sierra Maestra region in Cuba:

> "The manganese is thought to have been carried in warm waters emitted during the dying stages of the Sierra Maestra volcanism. . . .

Manganese-bearing solutions rose in channels through the porous volcanic rocks and deposited their mineral loads where structural and chemical conditions were favorable. . . . Manganese minerals were also deposited among permeable conduits, such as fault zones and fissures. . . . It is likely also, that enough oxygen, and locally enough silica, were present to form oxides or silicates of manganese. Oxygen might well be abundant or at least readily available under. . . near surface conditions of deposition, such as are postulated for the formation of the ores. . . . It is concluded that manganese oxides and silicates were deposited directly from warm waters. . . ."

The mineralogy and volcanic conditions at the Sierra Maestra deposits are similar to the mineralogy and volcanic conditions in the Luis Lopez manganese district.

The manganese deposits of the Luis Lopez manganese district are thought to have originated through the agency of fairly cool thermal solutions associated with the last part of the volcanism in the Chupadera Mountains. It is believed that the manganese minerals were deposited directly as oxides, in association with calcite, some silica, and barite.

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3. Accessibility of Project:

(a) The U.M.E.A. representative should contact any of the following people to arrange a visit to the property in Magdalena, New Mexico:

W. B. Jones - 3200 So. Dexter, Denver, Colo. - CE 6-4556

J. C. Canen - 4991 W. 29th St., Denver, Colo. - GI 5-4143

L. W. Jones - 730 Garland St., Lakewood, Colo. - BE 3-3253

Briefly, however, directions for reaching the property from Magdalena, New Mexico are as follows:

Go 7 miles south of Magdalena on Highway 107, turn left on the road to the Weston Ranch for 12 miles, again turn left just before reaching the Weston Ranch. The mine workings on the Black Goose #1 Claim are visible at this point and accessible on a choice of mine roads.

(b) Magdalena, New Mexico is on U. S. Highway 60 and is the terminal point of a Santa Fe Railroad spur line. The distance from Magdalena to the property on an improved road would be 17 miles.

The personnel required to perform the proposed exploratory work would be based in Magdalena, New Mexico.

4. The Exploration Project:

(a) Further exploration is required on the three areas described in 2f of this report to prove the continuity of the deposits in depth.

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Because of the nature of this deposit, diamond drilling has been proven to be entirely unsatisfactory of accurately exploring the ore body.

This deposit can be compared to a pegmatite deposit. In both cases, diamond drill exploration can be very misleading in that it is always possible to locate any one diamond drill hole in a very rich or barren zone in the orebody.

Therefore, it is our considered opinion that in order to obtain the most accurate results from further exploration work, the work should be done by sinking and drifting in the case of the fissure vein on the Mangum #1 Claim and the Morton Lease, and by drifting and crosscutting in the case of the massive deposits on the Black Goose #1 Claim and the Mangum #1 Claim.

It should be emphasized at this point that in the case of the massive deposits, the mining method to be used will definitely be that of an open pit operation, and the drifting and crosscutting under the exploration program to be outlined under this section should not be considered as a development program. Examination of the properties should easily prove the soundness of our proposed program.

The exploratory program planned on the Black Goose #1 Claim is as follows:

1. Drive a 5' x 7' drift on the axis of the ore body as outlined by the surface stripping at an elevation of approximately 100' below the crest of the hill. The total length of the drift will be 600'.

2. To delineate the ore body, exploratory crosscuts are to be driven from this drift at 100' intervals. The width of the ore body as exposed on the surface is approximately 150'; therefore, the total crosscutting required is 900'.

The exploratory program planned on the Langum #1 Claim and the Weston Lease is as follows:

1. Sink a 6' x 9' 1 and 1/2 compartment shaft for 100' on the fissure vein.

2. Drift north and south on the vein 200' in both directions, representing a total of 400' of drifting.

The exploratory program planned on the Langum #1 Claim in the massive deposit is as follows:

1. Drive a 5' x 7' drift on the axis of the ore body as outlined by the surface stripping at an elevation of approximately 60' below the crest of the hill. The total length of the drift will be 400'.

2. To delineate the ore body, exploratory crosscuts are to be driven from this drift at 100' intervals. The width of the ore body as exposed on the surface is approximately 100'; therefore, the total crosscutting required is 600'.

4. (c) This exploratory work could be started two weeks after the signing of a U.S.A. Contract, and could be completed in six months.

5. Experience.

The supervision, engineering and accounting required for this exploration program will be performed by E. R. Jones and R. A. Conrad whose qualifications are as follows:

E. R. Jones: Graduate of the University of California School of Mines. Eleven years active mining experience, most of which was in a supervisory capacity for U. S. Vanadium Corporation, Fisher, California. For the past nine years, he was Chief Engineer for large Pipeline and Construction Companies in Western United States.

R. A. Conrad: Graduate of the University of California School of Mines. Fifteen years experience in all phases of mine operations and mine engineering in gold, silver, copper, tin, tungsten, and uranium operations.

6. Estimate of Costs.

Black Goose 1 Claim Exploration Program.

(a) Preparation of Portal Site

	Labor per day	
Superintendent	$ 40.00	
Engineer	40.00	
Dozer Operator	23.00	
2 Miners	40.00	
Timber man	20.00	
Truck Driver	16.00	
	$179.00	
Payroll taxes & Insurance	25.00	
	$204.00 per day	
Estimated 10 days		$2,040.00

Rental Equipment per day Fueled & Maintained

D-7 Dozer	$ 80.00	
210 CFM Compressor	50.00	
1½ Ton Truck	20.00	
3/4 Ton Pickup	10.00	
	$160.00	
Estimated 10 days		$1,600.00

Materials

Timber	$400.00	
Explosives	30.00	
	$430.00	$ 430.00

(b) Construction of Powder Magazine - Only one Magazine for entire project.

Superintendent	$ 40.00	
Engineer	40.00	
Dozer Operator	23.00	
2 Miners	40.00	
Timber man	20.00	
Truck Driver	16.00	
	$179.00	
Payroll taxes & Insurance	25.00	
	$204.00 per day	
Estimated 5 days		$1,020.00

Rental Equipment per day Fueled & Maintained

D-7 Dozer	$80.00	
210 CFM Compressor	50.00	
1½ Ton Truck	20.00	
3/4 Ton Pickup	10.00	
	$160.00	
Estimated 5 days		$ 800.00

Materials

Timber	$600.00	
Explosives	80.00	
	$680.00	$ 680.00

(c) Drifting and Crosscutting 1500'

Superintendent	$ 40.00	
2 Miners	40.00	
Compressor Operator	16.00	
Dump Man	16.00	
	$112.00	
Payroll taxes & Insurance	17.00	
	$129.00 per day	
Estimated 250 days on single shift		$31,250.00

Rental Equipment per day Fueled & Maintained

210 CFM Compressor	$ 50.00	
Bucking Machine	25.00	
Cars	15.00	
	$ 90.00	
Estimated 250 days		$22,500.00

Materials

Explosives	$ 2.50/Ft.	
Rail Ties	2.00/Ft.	
Water	1.00/Ft.	
Pipe	1.00/Ft.	
	$ 6.50/Ft. x 1500'	$ 9,750.00

TOTAL - Blue Goose #1 Claim as per above $70,120.00

Mangum #1 Claim and Leston Lease Exploration Program

(a) Sink 6 x 9' - 1 and 1/2 Compartment Shaft - 100'

Superintendent	$ 40.00	
2 Miners	40.00	
Hoist Man	16.00	
	$ 96.00	
Payroll taxes & Insurance	14.00	
	$110.00 per day	
Estimated 40 days		$ 4,400.00

Rental Equipment per day Fueled & Maintained

Compressor	$ 50.00	
Hoist and Bucket	20.00	
Truck	20.00	
	$ 90.00	
Estimated 40 days		$ 3,600.00

Materials

Timber	$ 12.00/ft.	
Explosives	2.00/ft.	
Water	.50/ft.	
	$ 14.50/ft. x 100'	$ 1,450.00

(b) Drift 400 ' @ $ 42.00/ft. $ 16,800.00

Mangum #1 Claim Exploration Program

1. Portal Preparation:

Same as Black Goose #1 $ 4,120.00

2. Drift and Crosscut 1000'

Same as Black Goose #1 $ 42,000.00

TOTAL - Mangum Claim & Leston Lease $ 72,370.00

GRAND TOTAL - Blue Goose #1 Claim & Mangum #1 Claim & Leston Lease $142,490.00

In event of the work on all three programs in carried on concurrently, supervision would be handled with just the supervisors listed on the Estimated Cost Report. In the event of two shifts, the same supervisors would be in charge of operations.

6. (f) The Powder Magazine listed above is the only surface improvement to be constructed.

(g) The construction equipment to be rented, as indicated above, is on a fueled and maintained basis. Therefore, there will be no additional expense under this item.

As indicated in Item 5, the engineering and accounting work will be done by the supervisory personnel included in the construction costs.

Payroll taxes, etc. are included in the construction costs.

7. Magdalena Mining and Milling Company will furnish its pro-rata share of the cost of this program in cash.

DMEA Form 7
(12-56)

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Date	Surname	Code
6-5	Chapman	400
6-5	Martin	400
		110
		100

June 2, 1958

MEMORANDUM

To: Administrator, DMEA

From: Division of Iron and Ferro-Alloys, DMEA

Subject: Denial of the subject application for exploration assistance in the amount of $142,490.00
Docket No. DMEA 4979 - Manganese
Magdalena Mining and Milling Company
Black Goose and Mangum claims
Socorro County, New Mexico

A denial of the above-noted application for exploration assistance is recommended by this Division based on the following information.

This property was the subject of a request dated April 4, 1958, for exploration assistance at four sites comprising 1,400 feet of drifting, 1,500 feet of crosscutting, and 100 feet of shaft sinking at an estimated cost of $142,490.00.

The property was examined by W. L. Emerick, Geological Survey, and T. M. Romslo, Bureau of Mines, on April 15,1958. They were accompanied by R. M. Conrad, the applicant's vice-president and field superintendent.

Applicant:

Magdalena Mining and Milling Company
1260 Simms Street
Lakewood, Colorado

Property Ownership:

The properties held by the Applicant comprise 22 unpatented lode mining claims, the Black Goose claims 1 to 14 inclusive and the Mangum claims 1 to 8 inclusive and the Weston lease that contains 162.1 acres of patented land.

The Black Goose and Mangum claims are owned by Lee A. Logan, Duain Mangum and Paul H. Fewell. The C. V. Miller Company held the claims by a mining lease dated August 26, 1955, and assigned the lease to the Applicant on March 13, 1956.

The owners of the land of the Weston lease are A. E. Weston and his wife Edna Verne Weston and W. A. Rienhardt and his wife Faye Rienhardt. The mining rights have been assigned to the Applicant by a mining lease that was recorded on December 3,1956, in Socorro County, New Mexico.

The Black Goose claims are situated in sections 27, 34 & 35, T. 4 S., R. 4 W.

The Mangum claims are situated in section 30, T. 5 S., R. 3 W., and sections 13 and 24, T. 5 S., R. 4 W.

W½ SW¼ ?

The Weston lease is situated in T. 5 S., R. 3 W., and consists of the W½ SW¼, section 19 and the W½ NW¼, section 30. All located in Socorro County, New Mexico.

Geology: The area is underlain by massive rhyolite porphyry of probable Tertiary age. Generally the rhyolite is unaltered, except for hydro thermal alteration associated with faulting. Manganese mineralization in a variable degree is widespread in the rhyolite masses and in some cases deposits of economic value occur. Generally the mineralization is superficial and shallow in depth. In some places the mineralization occurs in distinct veins, but more often in vicinity of fault filling fracture plane between breccia fragments.

one word

History and Development:

The manganese deposits of the Black Goose and Mangum claims were discovered prior to location in 1950 and 1951. In 1950, Fred S. Norcross became interested and financed the digging of 4 shallow pits and 3 trenches. In 1951 W. K. Pratt acquired the property by lease. He applied to the DMA for exploration assistance (Docket No. DMA - 2132), an examination was made and the project was denied. In 1953 Clarence Barrett secured a lease and mined and shipped 36 tons of sorted ore, averaging 18.2 percent manganese. The ore was shipped to the stock pile at Deming, New Mexico. In 1956 the present applicant did some bulldozer stripping, excavated a few shallow trenches and

drilled numerous shallow test holes. In 1957 a 70 foot hole was drilled without recovering core or sludge. Access roads to other mineralized zones were bulldozed.

Ore Values and Tonnage:

Eighty-eight jack hammer test holes about 6 feet deep on the Mangum No. 2 claim averaged 2.6 percent manganese.

Ore tonnages and values are estimated as follows:

Black Goose No. 1 claim. In an area 150 feet wide the indicated and inferred reserves are estimated at 37,500 and 150,000 short tons averaging 3.7 percent manganese. Samples by Applicant, Soule and Examiners.

Mangum No. 1 claim. A vein is estimated to have indicated and inferred ore with 125 short tons and 1,125 short tons respectively, averaging 4 percent manganese. Samples were taken over a width of 2.5 feet in lengths of 60 and 120 feet.

The mineralized breccia zone is estimated to show indicated and inferred ore of 10,000 short tons and 40,000 short tons averaging 0.8 percent manganese.

Mangum No. 2 claim. In a mineralized zone about 450 feet long and 200 feet wide, the indicated and inferred ore reserves are estimated at 75,000 short tons and 300,000 short tons averaging 2.6 percent manganese. This average is from 88 test holes by applicant.

Comments and Conclusions:

The field examiners conclude that the manganese mineralization is wide-spread, shallow in depth and too low-grade to be of economic importance. The Field Team concurs in these conclusions and recommends denial of the application.

The Commodity Divisions of the Geological Survey, and the Bureau of Mines, concur in the recommendations of the Field Team.

W S Martin
W. S. Martin, Director
Division of Iron and Ferro-Alloys

TLCHAPMAN/dlm 6-5-58
cc to: Code 400
Admr. R. File
Oper. Comm.
Code 110

DMEA Form 7
(12-56)

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Date	Surname	Code
5-28	Chapman	400
5-28	Martin	400
6/16	Selfridge	130
6/13	Lamb	130
6/13	Kiilsgaard	130
6/16	Johnson	110
	Mittendorf	199
		230

JUN 16 1958

Magdalena Mining and Milling Company
1260 Simms Street
Lakewood, Colorado

Re: Docket No. DMEA 4979 - Manganese
Black Goose and Mangum Claims
Socorro County, New Mexico

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above-referenced property have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgement, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position of the National Defense Program.

Careful study of all our data indicates that, although manganese mineralization occurs on the property, the probability of disclosing significant reserves is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application is denied.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing this property to our attention.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

TLCHAPMAN/dlm 5-27-58
cc to: Code 400
Admr. R. File
Oper. Comm.
REGION III
Messrs. Gilbert DeHuff, Jr. USBM
T. H. Kiilsgaard, USGS

8623

DMEA
MAY 22 1958
C 220
WSM 400

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

May 21, 1958
Re: DMEA 4979
Magdalena Mining & Milling Co.
Black Goose & Mangum Claims
Socorro County, New Mexico
$142,490.00 - Manganese

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team Report

The applicant requested assistance in exploring four low-grade manganese deposits by shaft sinking, drifting and crosscutting. In 1951, the Black Goose deposits were the subject of an application for assistance on exploratory work - DMEA 2132. The application was denied.

Considerable preliminary prospecting, consisting of bulldozing, trenching and short percussion holes, had been done and areas of low-grade material in fractured and brecciated rhyolite partially delimited. Shipments of sorted ore have been made.

The examiners estimate the reserves as:-

Deposit	Tons Indicated	Grade % Mn	Tons Inferred	Grade % Mn
Black Goose #1	37,500	3.7	150,000	3.7
Mangum No. 1 (Vein)	125	4.0	1,125	4.0
Mangum No. 1 (Breccia)	10,000	0.8	40,000	0.8
Mangum No. 2	75,000	2.6	300,000	2.6
Total	122,625	2.790	491,125	2.793

The recorded shipments total:-

Shipper	Tons	Grade % Mn
Clarence Barrett	36	18.2
Magdalena M & M Co.	60	6.7
Stockpiled		
High Grade	5 Tons	
Lower Grade	10 Tons	

In the opinion of the examiners, the widespread manganiferous material is not presently of commercial grade and they recommend that the application be denied.

I concur with the recommendation.

N. E. Nelson

N. E. Nelson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
May 6, 1958

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DMEA
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DATE	INITIALS	CODE
5/9	C	220
5/12	JHB	130
5/12	C	220
5/13	WSM	400

Memorandum

To: Secretary to the Operating Committee

From: Acting Executive Officer, DMEA Field Team, ~~Region III~~

Subject: Docket No. DMEA 4979 (Manganese) Magdalena Mining and Milling Company (Black Goose and Mangum claims) Socorro County, New Mexico - Joint Report of Examination

Enclosed are the original and two copies of a joint field examination report on the subject property by T. M. Romslo, USBM, and W. L. Emerick, USGS.

The field examiners conclude that the manganese mineralization is wide spread, shallow in depth and too low in grade to be of present economic interest. They recommend that the application be denied.

We concur with the examiner's statement and we further believe that because of the low grade type of mineralization, the deposits are not significant. We, therefore, recommend that the application be denied.

E. N. Harshman

E. N. Harshman

ON SITE EXAM

Reviewed by
DMEA OPERATING COMMITTEE
5-12-58
(date)

MINERAL DEPOSITS
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DMEA
DEPARTMENT OF THE INTERIOR
MAY 5 1958
REGION III
DENVER, COLORADO

Box 4126 University Station
Tucson, Arizona

U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO
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RECEIVED MAY 9 1958

DATE	INITIALS	CODE
5/12	HB	130
		220

April 30, 1958

MEMORANDUM

To: W. H. King, Executive Officer, DMEA Field Team, Region III

From: T. M. Romslo
W. L. Emerick

Through: E. N. Harshman

Subject: Docket DMEA-4979 (Manganese) Magdalena Mining and Milling Company (Black Goose and Mangum claims) Socorro County, New Mexico.

Enclosed are the original and 8 copies of a joint field examination report on the above subject property recommending denial of the application for Government aid in exploration.

Also enclosed is the original application and Bureau copy of Routing Control sheet sent us by Mr. Harshman, which we have been instructed to return to your office.

The Survey copy of Routing Control Sheet is being sent direct to Mr. Harshman's office.

Original signed by
T. M. Romslo

T. M. Romslo
U. S. Bureau of Mines

W L Emerick

W. L. Emerick
U. S. Geological Survey

cc: W. H. King (8)
E. N. Harshman
DMEA/TUC
Emerick

TMR:WLE:ms

TRANSMITTED

MAY - 6 1958

Reviewed by
DMEA OPERATING COMMITTEE
5-12-58
(date)

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DATE	INITIALS	CODE
5/12	2KB	130
		220

FOR UNITED STATES GOVERNMENT USE ONLY

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED

MAY - 6 1958

DMEA-4979 (Manganese) Magdalena Mining and Milling Company

(Black Goose and Mangum Claims)

Socorro County, New Mexico

W. L. Emerick, Geologist
U. S. Geological Survey

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

April 1958

Reviewed by
DMEA OPERATING COMMITTEE
5-12-58
(date)

DMEA-4979 (MANGANESE) MAGDALENA MINING AND MILLING COMPANY
(BLACK GOOSE AND MANGUM CLAIMS)
SOCORRO COUNTY, NEW MEXICO

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INTRODUCTION

The Magdalena Mining and Milling Company, 1260 Simms Street, Lakewood, Colorado, applied to the Defense Minerals Exploration Administration for governmental aid in proposed explorations for manganese ores on the Black Goose and Mangum claims and Weston lease, Socorro County, New Mexico. The application was received by the Field Team, Region III, April 4, 1958. One copy of the application, later docketed as DMEA-4979, was forwarded to the examining team at Tucson, Arizona, with instructions that completion of field investigations and a report be expedited if a review of the application indicated approval of exploration. The claims are held by the applicant under lease and assignment from various owners.

The examining team, W. L. Emerick, geologist, U. S. Geological Survey and T. M. Romslo, mining engineer, U. S. Bureau of Mines, made the field investigations April 15, 1958, after their review of the application and other references to the property indicated a small exploratory program, as compared to the applicant's overly ambitious one, might be warranted. They were accompanied by R. M. Conrad, the applicant's vice president and field superintendent.

SUMMARY AND RECOMMENDATION

The deposits in a country rock of rhyolite porphyry consist of manganese mineralization of variable degrees in the vicinity of faults having associated zones of shear and brecciation. Manganese

minerals fill fracture planes and spaces between breccia fragments, or occur as distinct veins or veinlets. The degree of filling by the manganese minerals in the fracture planes, between breccia fragments, or in the veins, is seldom sufficient to constitute deposits of present economic value. The manganese mineralization is usually shallow in depth.

The measurable reserves of manganese ore of the 4 deposits on the property are insignificant. Indicated and inferred reserves on the property respectively are: 37,500 short tons and 150,000 short tons averaging 3.7 percent manganese; 125 short tons and 1,125 short tons averaging 4.0 percent manganese; 10,000 short tons and 40,000 short tons averaging about 0.8 percent manganese; and 75,000 short tons and 300,000 short tons averaging about 2.6 percent manganese.

The applicant proposed explorations at 4 sites comprising 1,400 feet of drifting, 1,500 feet of crosscutting, and 100 feet of shaft sinking at a total estimated cost of $142,490.00.

It is concluded by the field examiners that manganese mineralization is widespread, shallow in depth, and too low in grade to be of present economic interest.

The field examiners recommend denial of the application.

LOCATION, ACCESSIBILITY AND LOCAL FACILITIES

The Black Goose claims are about 14 air-miles south of Magdalena, New Mexico and the properties of the Weston Lease and Mangum

claims are an additional 4 air-miles to the south. Magdalena is a small town on U. S. Highway 60 and State Highway 107 and is the terminus of a branch line of the Atchison, Topeka and Santa Fe railroad from Socorro, New Mexico (fig. 1).

The properties may be reached from Magdalena partly over all weather graded roads and partly over dry weather bulldozer roads, all suitable for passenger automobiles. Following is a road log to the property:

	Miles
Magdalena - Junction State 107 with U. S. 60	0
S. W. on State 107 to junction signed "Muleshoe" and other ranches	7.5
Southeasterly on ranch road to another fork, similarly signed	13.7
Turn left from ranch road onto access mine road at about 1/4 mile north of the Weston Ranch headquarters	18.6
Easterly on access road to another fork	19.6
Access road of right fork ends at principal exploratory workings of Black Goose No. 1 claim	21.5

The Mangum claims and the property of the Weston Lease are reached from the Weston Ranch headquarters by driving 8 miles southerly on a southeasterly trending ranch road that passes through Puertecito Gap. From a fork at about 1/2 mile east of the Gap, an access road branching to the right is followed for about 1 mile to the mine workings.

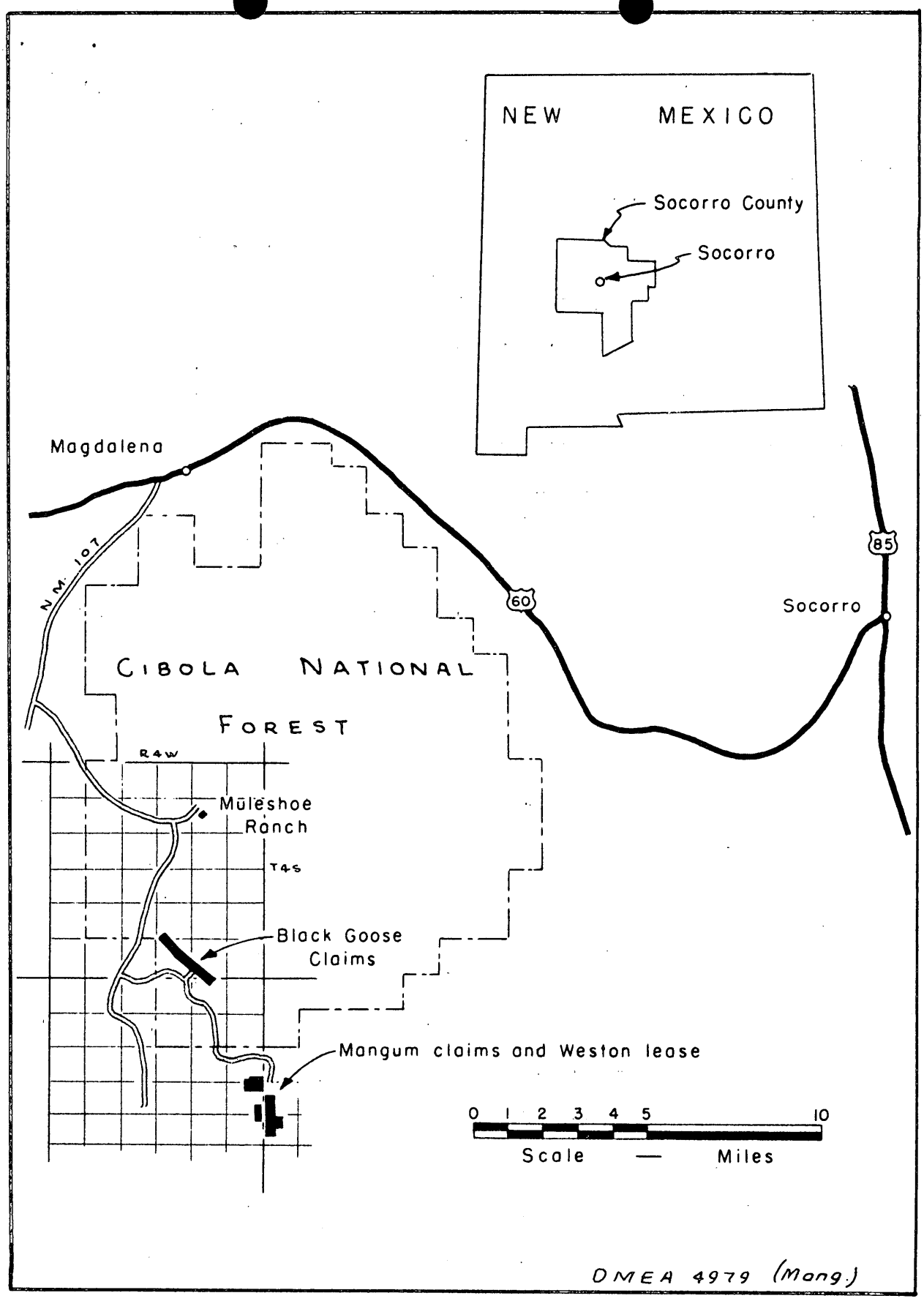

Fig. - 1 - Location map, Magdalena mining and milling company
Socorro County, New Mexico

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The deposits lie along the western foothills of the Magdalena Mountains at altitudes of nearly 7,000 feet. The topography is not rugged except for a few narrow and steep-walled canyons of the principal drainages from the mountains.

The properties are within the Cibola National Forest in areas that contain scattered groves of mainly cedar and pinon pine. Other vegetation includes native grasses, shrubs and cacti.

Precipitation averages about 20 inches annually. It occurs mainly as heavy summer thunder showers and light winter snowfalls.

Summers are pleasant and winters are severe only for short periods. Strong winds are common during the spring and fall.

PROPERTY

History and Production

The manganese deposits of the Black Goose and Mangum claims were discovered by unknown persons who had dug a few shallow exploratory pits before the claims were located in 1950 and 1951, respectively, by Duane Mangum and Lee Morgan of Magdalena, New Mexico.

During late 1950, Fred S. Norcross, Jr., formerly president and general manager of the Cuba Mining Co., became interested in the Black Goose claims and financed exploratory work that comprised 4 shallow pits and 3 shallow trenches. No additional work

was done on these claims to the spring of 1951 when W. K. Pratt and associates of Santa Fe, New Mexico, acquired the property by a lease and option agreement. Later in 1951 the new owners applied to the Defense Minerals Exploration Administration for aid in exploration of the higher grade portions of the property. The Administration's report of examination that was carried out under Docket DMA-2132 late in 1951 recommended denial of the requested aid. Shortly thereafter, W. K. Pratt and associates relinquished their rights to the property after having done little or no exploratory work. The property remained idle to 1953 when a lessee, Clarence Barrett of Socorro, New Mexico, mined and shipped 36 tons of sorted ore averaging 18.2 percent manganese to the Government purchasing depot in Deming, New Mexico. The next period of activity was during the first half of 1956 when the present lessee and applicant, the Magdalena Mining and Milling Co., did some bulldozer stripping, excavated a few shallow trenches and drilled numerous shallow test holes. In July 1957 the lessee returned and did additional trenching, diamond-drilled a 70-foot hole without recovering core or cuttings and bulldozed roads to other mineralized zones on the Black Goose claims. The property has been inactive since this work was completed late in September 1957.

Region IV Black Goose No. 2

Strip File 80,1630 Exam 7/12/50 Let 10/4/50 W D McMillan BM Mining Engineer

At the Mangum claims, the applicant did the first significant amount of work during October 1955 when 2 open cuts were excavated. Approximately 60 tons of low-grade ore was selectively mined

from one of the trenches and shipped to the Government purchasing depot in Deming, New Mexico. It reportedly contained 6.7 percent manganese and was amenable to concentration but was rejected because it did not meet the minimum grade requirement of 15 percent. Approximately 5 tons of high grade and 10 tons of lower grade ore that was selectively mined from the other opencut is stockpiled near the workings. Other exploratory work comprising the pneumatic drilling of numerous shallow test holes, the excavation of several shallow trenches and 1 small opencut, and the building of access roads was done during periods of a few months in each of 1956 and 1957. No work has been done since about September 1957.

Extent and Ownership of the Property

The properties held by the Magdalena Mining and Milling Co., the applicant, comprise 22 unpatented lode mining claims, the Black Goose Nos. 1 to 14 and the Mangum Nos. 1 to 8, and the Weston lease that contains 162.1 acres of patented land (fig. 2).

The 14 Black Goose claims and the 8 Mangum claims are owned by Lee E. Logan, Duane Mangum and Paul H. Fewell. C. V. Miller Co. held the claims by a mining lease dated August 26, 1955 and assigned the lease to the applicant March 13, 1956.

The owners of the land of the Weston lease are A. E. Weston and his wife Edna Verne Weston and W. A. Rienhardt and his wife Faye Rienhardt. They have assigned the mining rights of the property to the applicant by a Mining Lease that was recorded December 3, 1956 by the County Clerk, Socorro County, New Mexico.

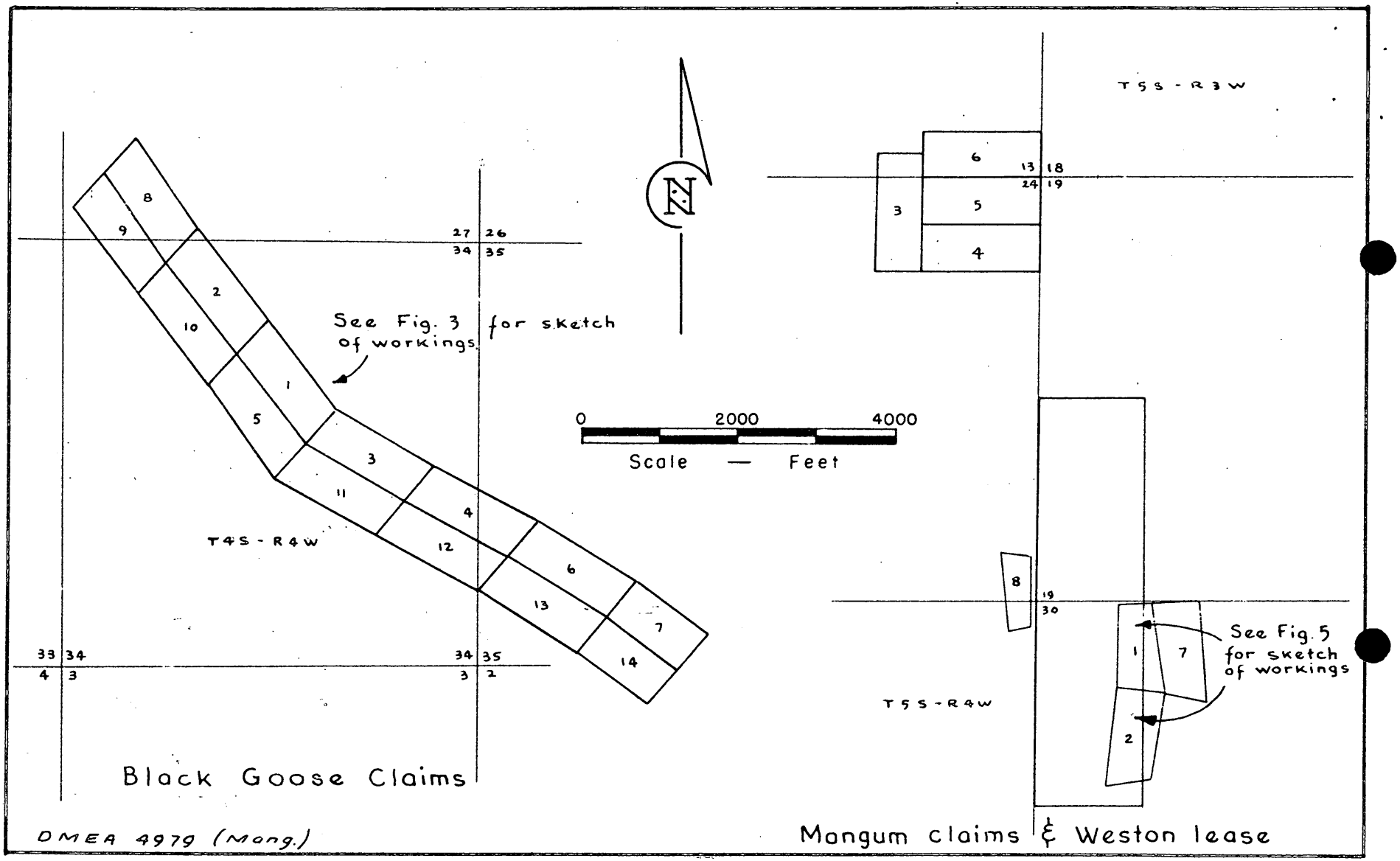

Fig. 2 - Claim map, Magdalena Mining and Milling Company
Socorro County, New Mexico

Present status

The property is inactive. The location and extent of the principal workings in the 3 areas examined are shown on Figures 3 and 5. There is no mining or milling equipment on the properties and mining supplies and materials are confined to a few items stored in a 15-by-30-foot house on the Black Goose No. 1 claim.

GEOLOGY

The applicant's claims are underlain by massive rhyolite porphyry of probable Tertiary age. Regionally, the rhyolite porphyry covers extensive areas on the east and west slopes of the Magdalena Mountains and the San Mateo Mountains to the west and southwest. The rhyolite porphyry is unaltered but locally there may be some hydrothermal alteration associated with faulting. Manganese mineralization in variable degrees is widespread in the rhyolite masses of the region and locally some deposits of economic quality occur, although the manganese mineralization in the rhyolite type rocks is usually superficial and shallow in depth. In places the manganese mineralization occurs as distinct veins, but more often the manganese mineralization occurs in the vicinity of faults having associated zones of shear and brecciation in which the manganese minerals fill fracture planes and spaces between breccia fragments. The degree of filling by the manganese minerals in the fracture planes and between the breccia fragments, or in the veins, is seldom sufficient to constitute deposits of present economic value.

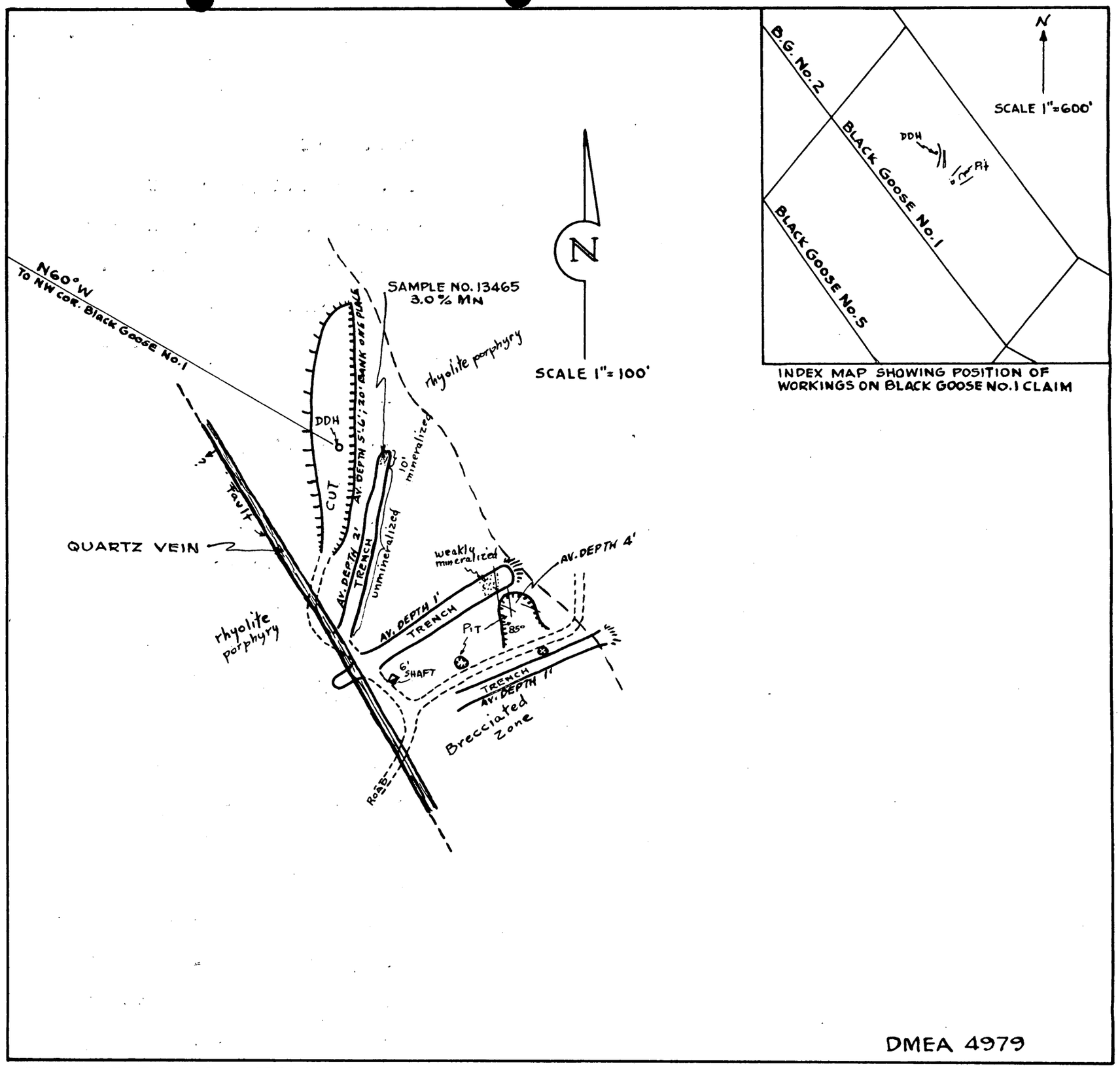

FIGURE 3.- SKETCH OF WORKINGS, BLACK GOOSE No.1 CLAIM, MAGDALENA MINING & MILLING CO., SOCORRO COUNTY, NEW MEXICO.

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DMEA
RECEIVED MAY 9 1958
DATE | CODE

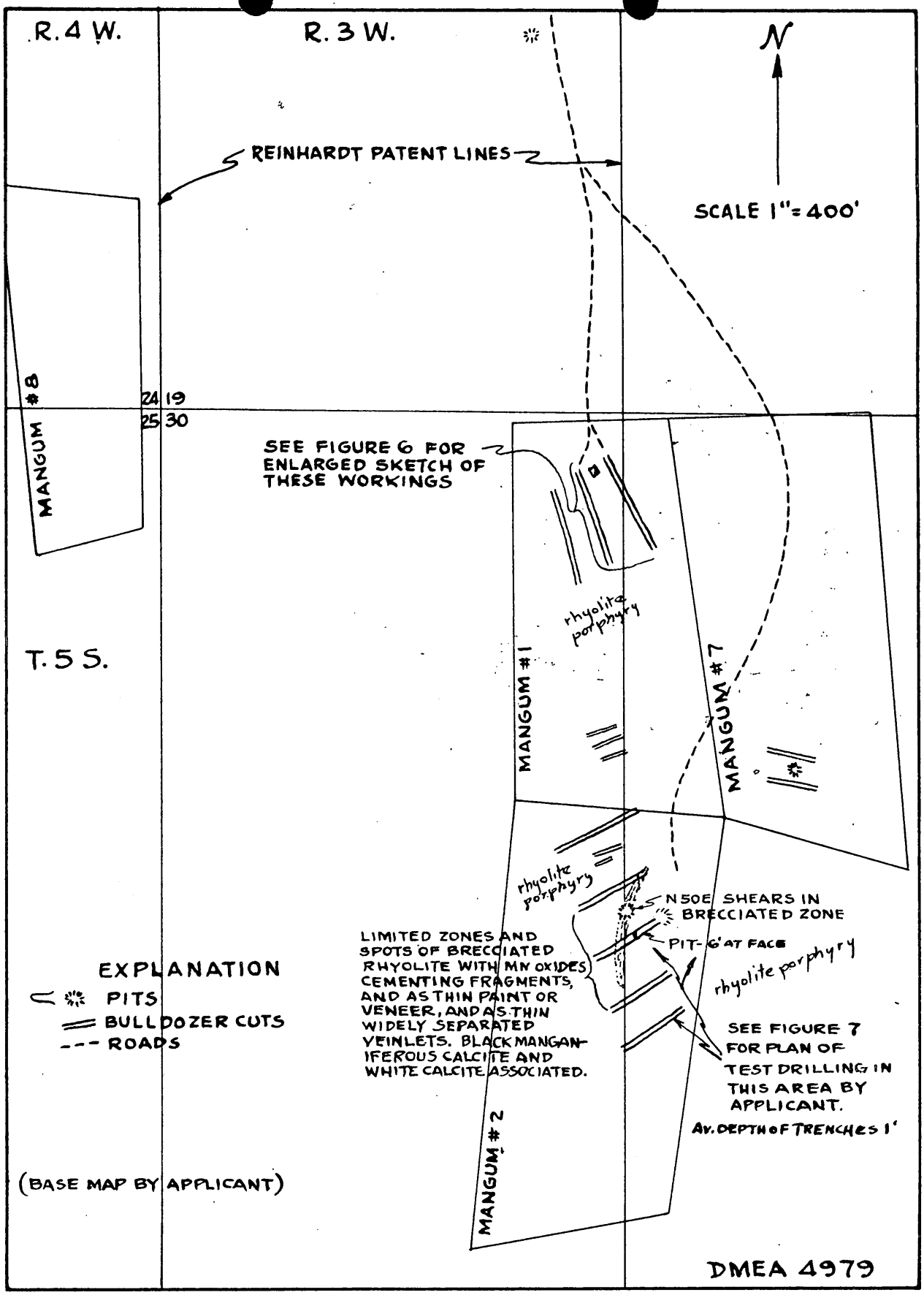

FIGURE 5. WORKINGS ON MAGNUM GROUP OF CLAIMS, MAGDALENA MINING AND MILLING COMPANY, SOCORRO COUNTY, NEW MEXICO.

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JUN 1
DATE

The manganese minerals are psilomelane, pyrolusite and some manganite, associated at places with black manganiferous and white calcite and quartz.

The applicant proposed DMEA exploration on the Black Goose No. 1 claim; Northeast end of the Mangum No. 1 claim, and in the east central part of the Mangum No. 2 claim.

The deposit on the Black Goose No. 1 claim (Figs. 2 and 3) lies on the top of a southerly trending ridge. A fault, striking about N. 30 W. and dipping steeply to the southwest, traverses the claim. A fairly wide zone of shearing and brecciation bearing manganese mineralization lies on the northeast side of the fault. A barren, brecciated quartz vein, forming the hanging wall side of the fault, bounds the mineralized zones on the west. Farnham[1/] says:

> "Manganese mineralization occurs * * * * along shear and brecciated zones in rhyolite. The zones strike N. 15°-25° W. and range in dip from vertical to steeply southwestward. The principal and most thoroughly explored deposit crops out across the top of a southerly trending ridge rising several hundred feet above the neighboring washes. In this area various amounts of manganese minerals are present in a brecciated zone ranging from 80 to 140 feet in width and traceable in places along the strike for some 300 feet. * * * * The mineralized zone is bounded on the southwest by a barren quartz vein ranging up to 30 feet in width." * * * *
>
> "The manganese minerals, consisting of psilomelane and pyrolusite, occur in the zones as seams, veinlets and small irregular bunches surrounding the brecciated fragments of rhyolite. The gangue, in addition to the unmineralized rhyolite, consists of small amounts of calcite and quartz."

1/ Farnham, L. L., U. S. Bureau of Mines, unpublished report notes, 1958.

Soulé[2/] stated in a previous DMEA report on the Black Goose No. 1 claim that:

"* * * * Where brecciation has been intense and large voids were present, fairly good-grade manganese deposits were found. However, throughout much of the area the brecciation was not intense and the manganese minerals merely occupy the cracks between breccia fragments and the fracture planes in fractured rock, and constitute low grade mineralization. This type of mineralization is quite extensive."

Soulé continues:

"Although all of the manganese minerals probably were derived from a common source, presumably by the weathering of overlying rocks containing small amounts of manganese, subsequent erosion has detached the exposures. That the mineralization is superficial and extends to no great depths is indicated where erosion has cut valleys between the deposits. Manganese mineralization was sparse at a depth of approximately 100 feet vertically below the outcrops at the highest points. Concentrations of manganese do not exist at the bottom of the two main canyons that cut through the area * * * *."

The examining team checked the point of vertical extent of the deposit and agree with Soulé.

The applicant has explored on the Black Goose No. 1 claim by shallow trenches, a cut, 133 closely-spaced "jack hammer" holes averaging about 6 feet in depth, and one inclined diamond drill hole 72 feet in depth. Figure 4 is a plan of the test drilling in the workings represented by Figure 3.

2/ Soulé, J. H., U. S. Bur. of Mines, DMA Report 2132, 1951.

Sample 13465, assaying 3.0 percent Mn, represents a check grab sample from broken material in the north end of the most northerly trench (Fig. 3). The result is considerably less than the 7.52 percent Mn the applicant obtained as an average from 4 shallow drill holes in the same part of the trench. Overall, the manganese mineralization on the Black Goose No. 1 claim would probably be too low grade for efficient concentration.

On the northeast end of the Mangum No. 1 claim (Fig. 5) a large fault striking about N. 10 E. and dipping from vertical to about 85° west has been exposed by an open cut (Fig. 6). An irregular mineralized vein ranging from less than an inch to as much as 1 foot or more occurs in a 2½-foot zone on the footwall side of the fault. Bounding this 2½-foot mineralized zone on the west is an irregular, barren brecciated zone ranging from 1 to 2 feet wide where exposed in the cut. Thin veinlets of manganese oxide and calcite border the brecciated zone on both sides. Considerable black manganiferous calcite and white calcite are intermingled with the manganese oxides in the thicker portions of the mineralized vein. A 2½-foot wide channel chip sample (No. 13466, Fig. 6) was taken across the mineralized vein in the cut. It assayed 4.1 percent Mn. A trench about 100 feet west of the mineralized vein exposed low grade manganese mineralization in a sheared and brecciated zone. The manganese mineralization occurs as thin coatings or crusts of manganite and psilomelane associated with black manganiferous and white calcite.

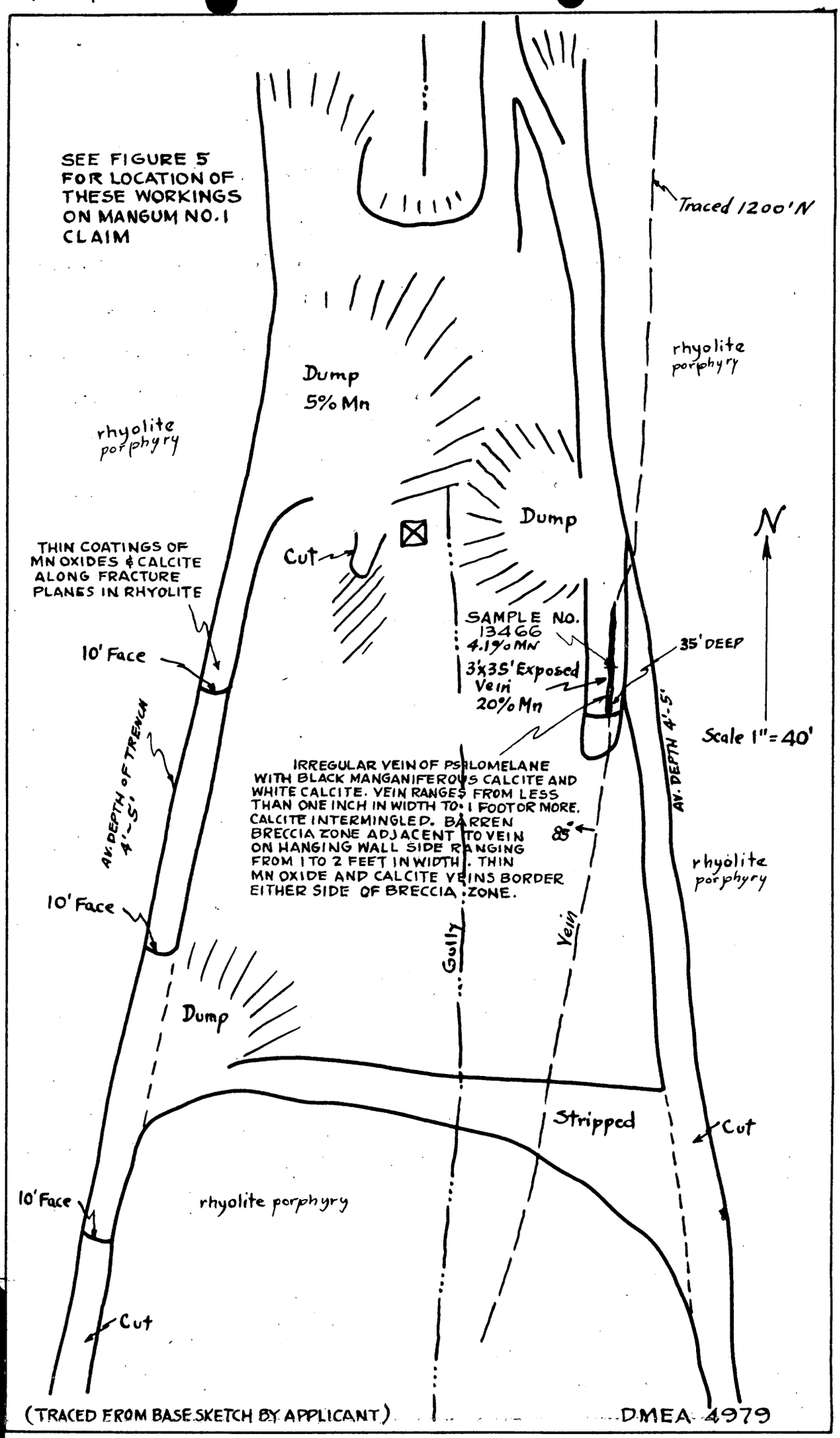

FIGURE 6. SKETCH OF NE. END MANGUM NO. 1 CLAIM, MAGDALENA MINING AND MILLING COMPANY, SOCORRO COUNTY, NEW MEXICO.

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Farnham[3/] states:

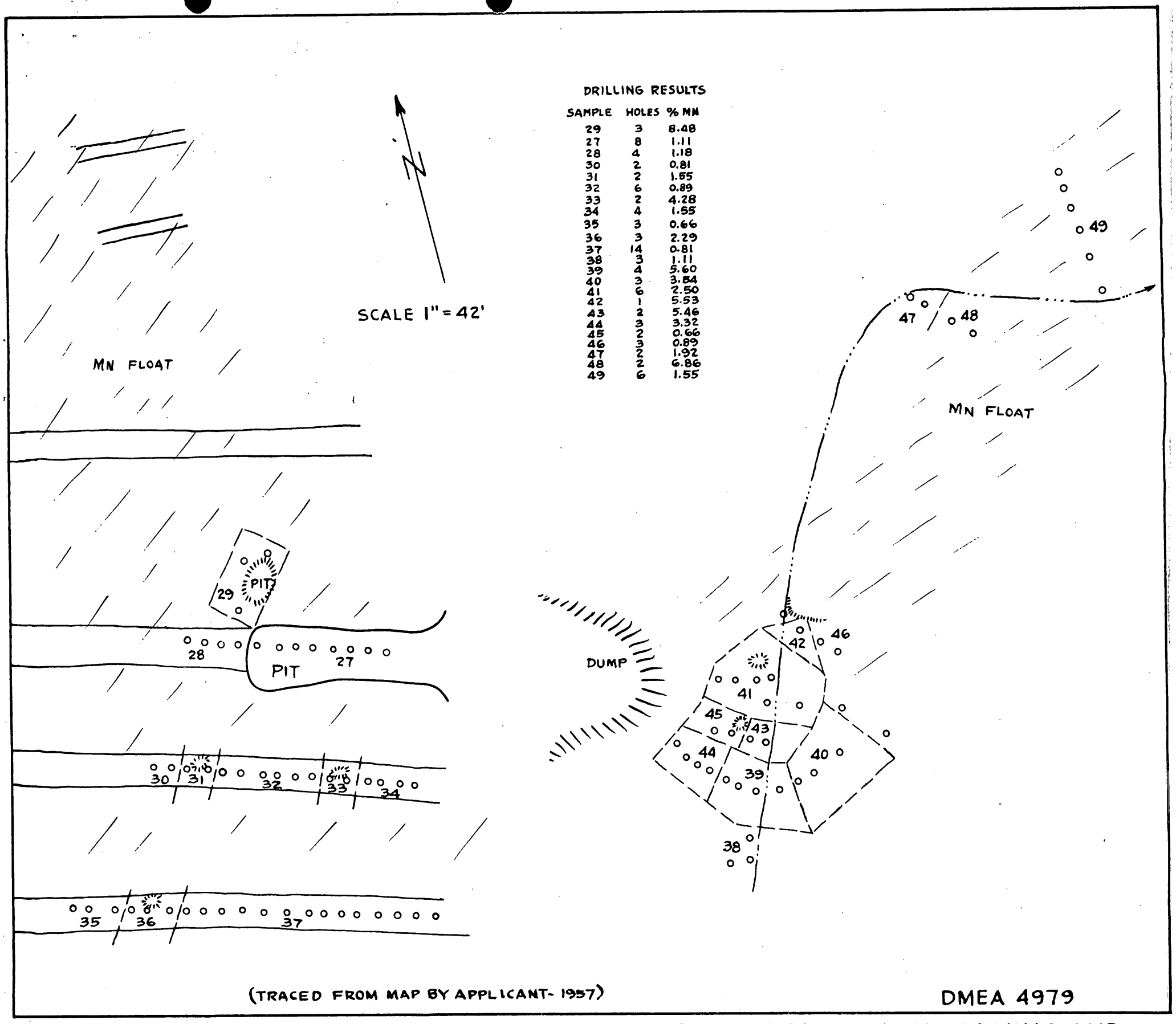
"* * * * Both the mineralized veins and the zones trend from north to northeast and range in dip from vertical to about 60° eastward. The veins vary from a few inches to 2 feet in width and have exposed lengths ranging from 20 to 100 feet. The ore along the veins may occur as a single veinlet or in parallel stringers from one to 3 inches wide which occasionally coalesce forming irregular pod-like lenses as much as 2 feet in width.

"In the shear and brecciated zones, the ore minerals occur in thin films, veinlets and small nodular masses distributed erratically amongst barren fragments of the country rock."

On the Mangum No. 2 claim (Fig. 5) a narrow shear and brecciated zone about 15 feet wide has been exposed in a pit and two dozer-stripped trenches. Other trenches to the north and south are essentially barren or show only limited, small patches of manganese-cemented breccia. Manganese oxides occur as thin veinlets, cement, and as coatings on breccia fragments. Occasionally there are small pods of manganese oxide. The intensity of mineralization, while nowhere great, is more apparent in limited zones along the sheared and brecciated strip exposed in the pit and two of the trenches (Fig. 5). The veinlets of manganese oxide are widely separated. Black manganiferous and white calcite are abundant associates of the manganese oxides.

The applicant drilled about 88 jack hammer test holes on the Mangum No. 2 claim (Fig. 7), the results of which indicate an average low grade mineralization of about 2.6 percent Mn.

3/ Opus citus 1958.



DRILLING RESULTS

SAMPLE	HOLES	% MN
29	3	8.48
27	8	1.11
28	4	1.18
30	2	0.81
31	2	1.55
32	6	0.89
33	2	4.28
34	4	1.55
35	3	0.66
36	3	2.29
37	14	0.81
38	3	1.11
39	4	5.60
40	3	3.84
41	6	2.50
42	1	5.53
43	2	5.46
44	3	3.32
45	2	0.66
46	3	0.89
47	2	1.92
48	2	6.86
49	6	1.55

FIGURE 7 .- PLAN OF TEST DRILLING, MANGUM No.2 CLAIM, MAGDALENA MINING AND MILLING COMPANY, SOCORRO COUNTY, NEW MEXICO.

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ORE RESERVES

The measurable reserves of manganese ore in the 4 deposits examined are confined to an estimated 5 tons of high-grade (30 to 40 percent) and 15 tons of low grade (10 to 15 percent) ore stockpiled on the Mangum No. 1 claim.

The indicated and inferred reserves of each deposit, as shown below, have been estimated on the basis of fairly well defined areal extents and adequate assays. Factors applied are 12 cubic feet per short ton and depth extensions of 10 and 40 feet for the indicated and inferred reserves, respectively.

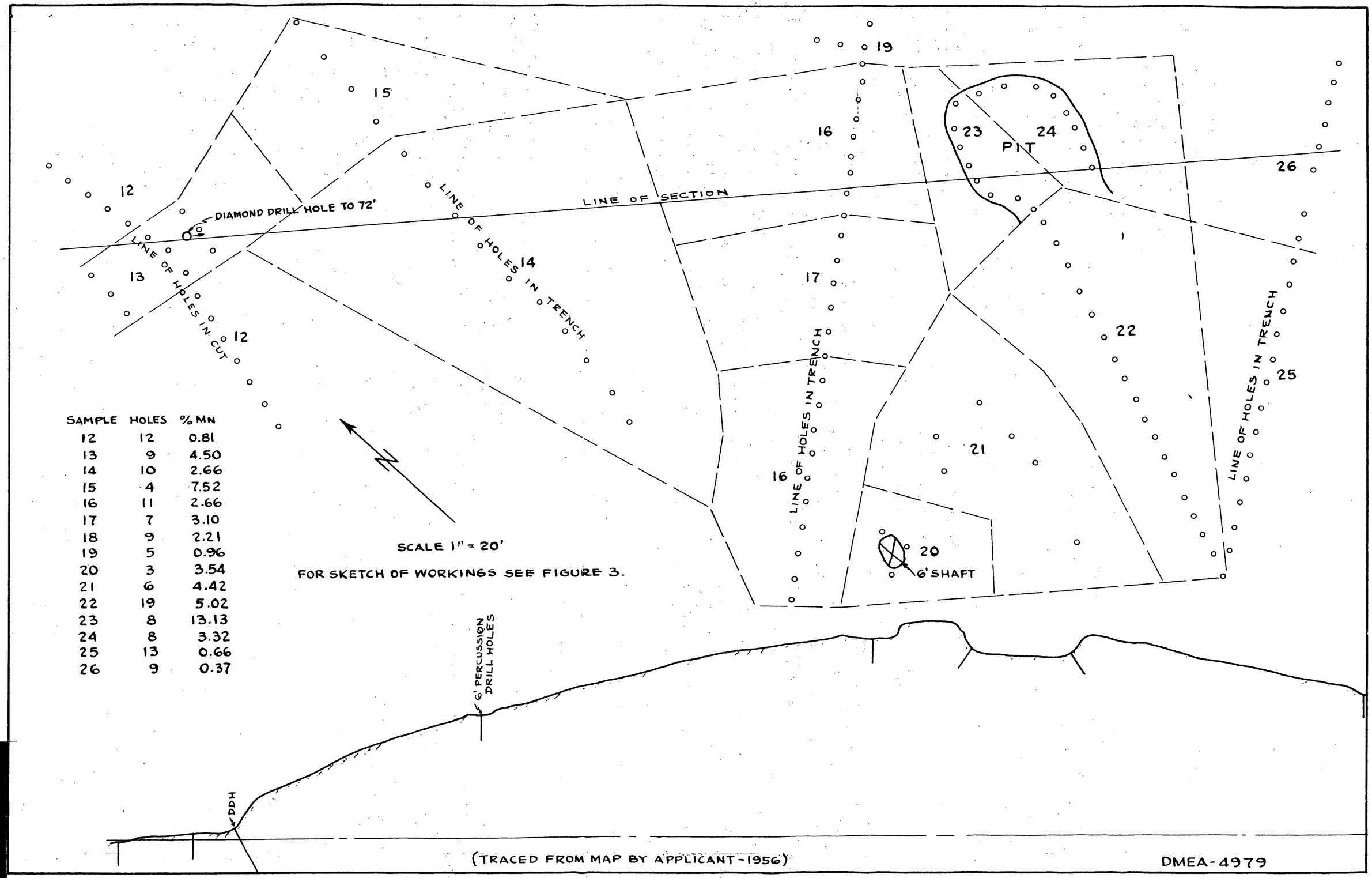
Included in each of the deposits are small zones of higher than average grade material that could yield insignificant tonnages of shipping or milling ore by selective mining and/or hand sorting operations.

Black Goose No. 1 claim (Fig. 3). The indicated and inferred reserves of 37,500 short tons and 150,000 short tons, respectively, each containing about 3.7 percent manganese, are present in the most highly mineralized area that is approximately 150 feet wide and 300 feet long. The grade, 3.7 percent, is the arithmetical average of the assays of the 133 holes drilled by the applicant. It checks closely with the 3.4 percent obtained by arithmetically averaging the percent manganese assays of 8 samples taken by DMEA examiners, 7 by Soulé (5.1, 4.2, 0.15, 1.8, 11.0, 1.1, 1.15), and 1 by the present field examiners (3.0).

Mangum No. 1 claim (Figs. 5 and 6). The indicated and inferred reserves of the vein (fig. 6) have been estimated at 125 short tons and 1,125 short tons, respectively, each containing about 4.0 percent manganese. The 2.5-foot wide vein has indicated and inferred lengths of 60 feet and 120 feet, respectively. The manganese content of about 4.0 percent is the assay of our sample containing material of indicated average grade. It also approximates the 3.3 percent manganese of the indicated 100 tons of vein material mined to recover the 15 tons of stockpiled ore containing a liberally estimated average of 23 percent manganese.

The mineralized breccia zone at about 100 feet west of the vein is about 150 feet long and 80 feet wide. Indicated and inferred reserves of the zone total an estimated 10,000 short tons and 40,000 short tons, respectively, of material assaying about 0.8 percent manganese. The grade of 0.8 percent is indicated by production records that show 60 tons of sorted ore containing 6.7 percent manganese was obtained from approximately 500 tons of rock mined from a trench about 150 feet long, 10 feet wide and 4 feet deep.

Mangum No. 2 claim (Figs. 5 and 7). The indicated and inferred reserves of the mineralized zone that is about 450 feet long and 200 feet wide have been estimated at 75,000 short tons and 300,000 short tons, respectively, each of 2.6 percent manganese. The grade of 2.6 percent is the average assay values of the 88 test holes drilled and sampled by the applicant.



SAMPLE	HOLES	% MN
12	12	0.81
13	9	4.50
14	10	2.66
15	4	7.52
16	11	2.66
17	7	3.10
18	9	2.21
19	5	0.96
20	3	3.54
21	6	4.42
22	19	5.02
23	8	13.13
24	8	3.32
25	13	0.66
26	9	0.37

FIGURE 4 .- PLAN OF TEST DRILLING WITH PROFILE, BLACK GOOSE No. 1 CLAIM, MAGDALENA MINING AND MILLING COMPANY, SOCORRO COUNTY, NEW MEXICO.

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RECEIVED MAY 19 1958

DATE	INITIALS	CODE

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 19 1958

DATE	INITIALS	CODE
5-19	C	220
	WSM	400

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date May 15, 1958

DMEA Docket No. 4979
DMEA Contract No.
Commodity Manganese
Name of applicant Magdalena Mng & Milling
Name of property Black Goose & Mangum claims
Location of property Socorro Co., New Mex.
Estimated cost of project $142,490

To: W. S. Martin, DMEA

From: G. L. DeHuff, Jr., Commodity Specialist
Branch of Ferrous Metals and Ferroalloys

Subject: Review of Field Team Report
(~~Application~~, Field Team Report, ~~etc.~~)

1. Date of subject document: 5/6/58 2. Date received by reviewer: 5/12/58

3. Prior reports on this property known to reviewer: Yes [XX] No [ ]

4. Prior reports on nearby properties known to reviewer: Yes [ ] No [ ]

5. Information available on past production: Yes [XX] No [ ]

6. Other pertinent factors known to reviewer: Yes [XX] No [ ]

7. Explain items marked yes above: Please see my 4/18/58 memo.

8. Factors needing special consideration:
   a. Location [ ]
   b. Ownership [ ]
   c. Evidence of mineralization
   d. Geology [ ]
   e. Proposed exploration method [ ]
   f. Alternate exploration method [ ]
   g. Costs [ ]
   h. [ ]

9. Action advised:
   a. Obtain information from applicant [ ]
   b. Refer to Field Team [ ]
   c. Denial [XX]
   d. Agree with Field Team [XX]
      i. Consult with Mr. _____ at _____ AEC office.
   e. Disagree with Field Team [ ]
   f. Suggest alternate plan [ ]
   g. Request another examination [ ]
   h. Approval [ ]

10. Remarks: (Use back of page if necessary)

G L DeHuff Jr

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4-23	[illegible]	400
4-23	Martin	400
4/23	[illegible]	130
"	Johnson	110
"	Patterson	400
		220

APR 24 1958

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA 4979 - Manganese
Magdalena Mining and Milling Company
Black Goose and Mangum Claims
Socorro County, New Mexico

Dear Mr. Harshman:

We note from your letter of April 7, 1958, that the Tucson Office is being instructed to review the subject application immediately and if approval of exploration is indicated, to make a field examination and report at an early date.

We will, therefore, hold this application in abeyance until your report and recommendations are received.

Copies of memoranda dated April 14 and 18, 1958, by N. E. Nelson, Geological Survey, and G. L. DeHuff, Jr., Bureau of Mines, respectively, relating to the project are enclosed. Also enclosed is an extra copy of the application for the use of the Field Team.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

APPROVED:

Frank D. Lamb (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

JHOPKINS:WSMARTIN:foc
4-23-58
cc to: Code 400
Admr. R. File
Oper. Comm.
FT. REG. III
Messrs. G. L. DeHuff, Jr., USBM
T. H. Kiilsgaard, USGS

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4-23	Hopkins	400
4-23	Martin	400
		130
		110
		100
		JHB 220

Mr. E. W. Harshman,
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA 4979 - Manganese
Magdalena Mining and Milling Company
Black Goose and Mangum Claims
Socorro County, New Mexico

Dear Mr. Harshman:

The above-docketed application for exploration assistance is being referred to your office for review and a field examination of the property if necessary.

Copies of memoranda dated April 14 and 18, 1958, by N. F. Nelson, Geological Survey, and G. L. DeHuff, Jr., Bureau of Mines, respectively, relating to the project are enclosed. Also enclosed is an extra copy of the application for the use of the Field Team.

Sincerely yours,

APPROVED:

Chairman, Operating Committee

Member, Bureau of Mines

Member, Geological Survey

JHOPKINS/dlm 4-23-58
cc to: Code 400
Admr. R. File
Oper. Comm.
FT. REG. III
Messrs. G. L. DeHuff, Jr. USBM
T. H. Kiilsgaard, USGS

Enclosures

8623

DMEA Form 7
(12-56)

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Date	Surname	Code
4-23	Hopkins	400
4-23	Martin	400
4/23	Selfridge	430
4	[illegible]	110
	Mittendorf	100
4/24		220
		400
4/23	Lamb	130
4/23	Kilsgaard	130

APR 24 1958

Magdalena Mining and Milling Company
1260 Simms Street
Lakewood, Colorado

Re: Docket No. DMEA 4979 - Manganese
Black Goose and Mangum Claims
Socorro County, New Mexico

Gentlemen:

The above-referenced application for exploration assistance for manganese ores is now being reviewed. If further information is required or if a field examination is considered necessary, you will be so advised by Mr. E. N. Harshman, Acting Executive Officer, DMEA Field Team, Region III, 224 New Customhouse, Denver, 2, Colorado.

Any assistance you may give the members of the Field Team will be appreciated.

Sincerely yours,

C. O. Mittendorf (fw)

Administrator

JHOPKINS/WSMARTIN/foc
4-23-58
cc to: Code 400
Admr. R. File
Oper. Comm.
FT. REG. III
Messrs. G. L. DeHuff, USBM
T. H. Kiilsgaard, USGS

8623

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DMEA
RECEIVED APR 18 1958

DATE	INITIALS	CODE
4/18	C	220
	WSM	400

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date April 18, 1958

DMEA Docket No. 4979
DMEA Contract No.
Commodity Manganese
Name of applicant Magdalena Mng. & Milling
Name of property Black Goose & Mangum Claims
Location of property Socorro Co., N. Mex.
Estimated cost of project $142,490

To: W. S. Martin, DMEA

From: G. L. DeHuff, Jr., Commodity Specialist
Branch of Ferrous Metals & Ferroalloys

Subject: Review of Application
(Application, Field Team Report, etc.)

1. Date of subject document: 4/4/58 2. Date received by reviewer: 4/11/58

3. Prior reports on this property known to reviewer: Yes [XX] No [ ]

4. Prior reports on similar properties known to reviewer: Yes [ ] No [ ]

5. Information available on past production: Yes [XX] No [ ]

6. Other pertinent factors known to reviewer: Yes [XX] No [ ]

7. Explain items marked yes above: These claims were examined in July 1956 by L. L. Farnham, and in July 1950 by W. D. MacMillan. Apparently there is some possibility of some tonnage, but estimates of the possibilities differ, and grade is low. Trenching and test pitting by Cuba Mining Co. in 1950 was said to be disappointing. Note says, "Norcross, of (cont'd below)

8. Factors needing special consideration:
a. Location [ ]
b. Ownership [ ]
c. Evidence of mineralization
d. Geology [ ]
e. Proposed exploration method [XX]
f. Alternate exploration method [ ]
g. Costs [XX]
h. Milling possibilities & tonnage to supply a mill [XX]

9. Action advised:
a. Obtain information from applicant [ ]
b. Refer to Field Team [XX]
c. Denial [ ]
d. Agree with Field Team [ ]
e. Disagree with Field Team [ ]
f. Suggest alternate plan [ ]
g. Request another examination [ ]
h. Approval [ ]
i. Consult with Mr. _____ at _____ AEC office.

10. Remarks: (Use back of page if necessary) Suggest that this application be referred to the Field Team for consideration.

G L DeHuff

7 above cont'd. - Freeport Sulphur, examined the property after Mac Millan and thought well of it to extent of offering $1000 for prelim exam." 36 L.D.T. shipped to Deming averaged 18.24% Mn. This appears to be the only production, but producing mines are in the district.

OFFICIAL FILE COPY
DMEA
RECEIVED APR 15 1958

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

April 14, 1958
Re: DMEA 4979
Magdalena Mining and Milling Company
Black Goose and Mangum Claims
Socorro County, New Mexico
$142,490.00 - Manganese

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application

The applicant requests assistance in exploring three low grade manganese deposits by shaft sinking, drifting, and crosscutting.

The manganese, principally as psilomelane, occurs in a breccia zone in rhyolite. Deposits in the general area have been mined to a depth of 200 feet and the psilomelane is taken to be of hypogene origin.

Preliminary prospecting, consisting of bulldozing and short percussion holes, has been done and 2 areas of low grade concentrating material have been outlined. A third showing is vein-like and apparently the material is higher grade than that in the so-called massive occurrences. The proposed work would tend to delimit the occurrences in preparation for open cut mining in 2 cases and underground mining in the case of the vein-like deposit. Diamond or other drilling is considered impractical as the brecciated material does not core well.

Of 49 samples taken from the percussion drill holes;
12 assayed less than 1%
10 assayed from 1 to 2%
14 assayed from 2 to 4%
8 assayed from 4 to 6%
3 assayed from 6 to 8%
1 assayed from 8 to 10%
1 assayed over 10% (13.13%)

Referral of the application to the Field Team is recommended.

N. E. Nelson

N. E. Nelson

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

April 10, 1958

Magdalena Mining and Milling Company
1260 Birms Street
Lakewood, Colorado

Subject: DMEA-4979

Gentlemen:

Your application for exploration assistance, dated March 4, 1958 submitted to our office at Denver, Colorado has been assigned Docket Number DMEA-4979 and referred to the Iron and Ferro-Alloys Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

Copy to: Region III

Official

EXTRA COPY, DMEA		
RECEIVED APR 10 1958		
DATE	INITIALS	CODE

224 New Customhouse
Denver 2, Colorado
April 7, 1958

Memorandum

To: W. L. Emerick
T. M. Romslo

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Manganese) Magdalena Mining and Milling Company (Black Goose and Mangum claims) Socorro County, New Mexico

In accordance with our telephone conversation, enclosed is one copy of the subject application for DMEA aid in the amount of $142,490.

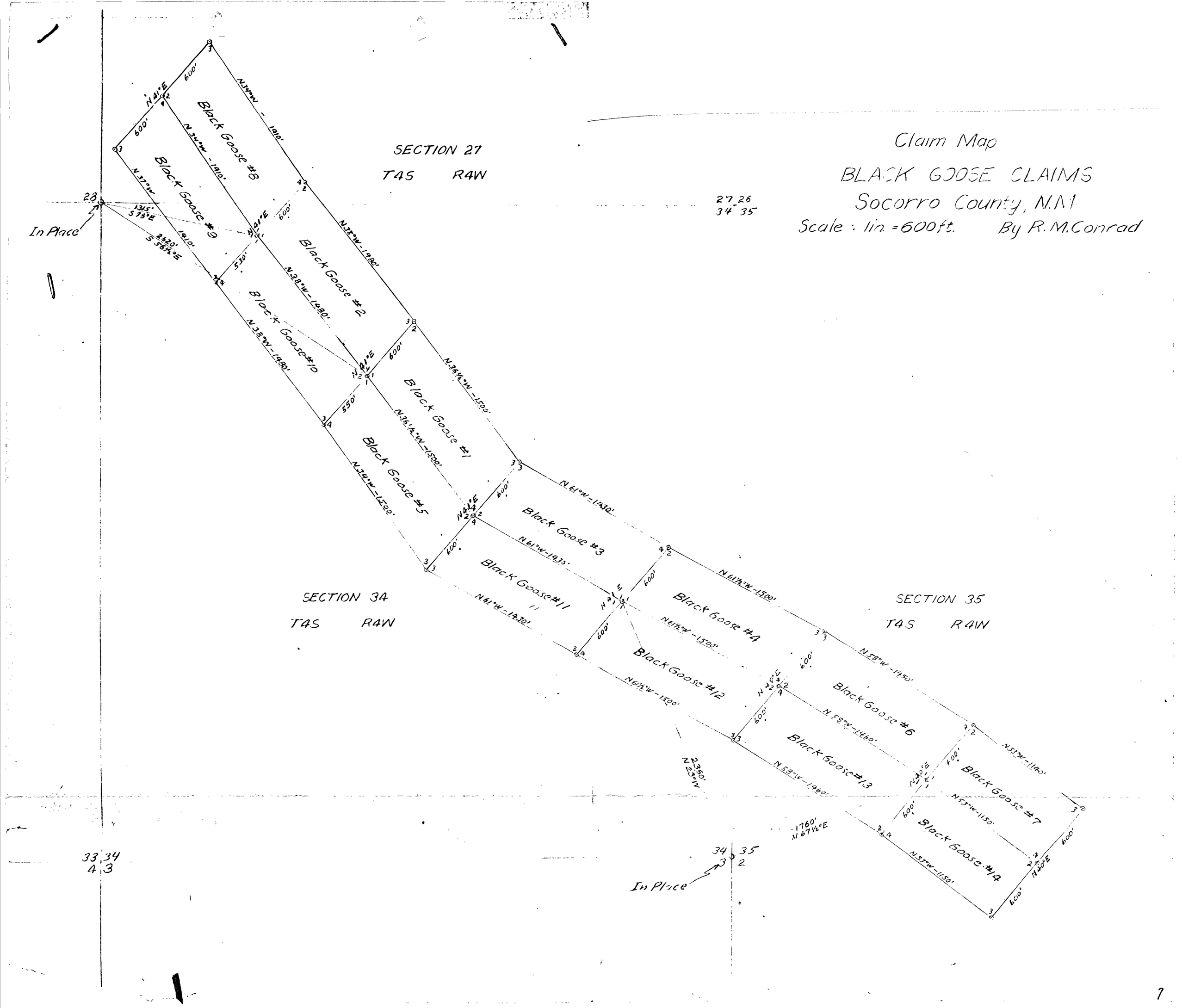
Please review the application immediately and if approval of exploration is indicated, make arrangements for a field examination and report at an early date.

Mr. J. C. Capen, the partner who submitted the application to this office, stated that their field man to contact for a field examination is Mr. R. M. Conrad, Bell Shore Motel, Lordsburg, New Mexico.

for E. W. Harshman

HMC:dp

cc: Sec. Op. Comm. (2)
Harshman
Docket
Chron.


Claim Map
BLACK GOOSE CLAIMS
Socorro County, N.M.
Scale: 1in. = 600ft.
By R.M. Conrad
SECTION 27
T4S R4W
SECTION 34
T4S R4W
SECTION 35
T4S R4W
Black Goose #1
Black Goose #2
Black Goose #3
Black Goose #4
Black Goose #5
Black Goose #6
Black Goose #7
Black Goose #8
Black Goose #9
Black Goose #10
Black Goose #11
Black Goose #12
Black Goose #13
Black Goose #14
In Place
27 26
34 35
33 34
4 3
2360' N 23°W
1760' N 67½°E