APPLICATION FOR AID FOR AN EXPLORATION PROJECT

under

Mineral Order 5

Defense Production Act of 1950

MAY 1951.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 1 - 1951
LANDON F. STROBEL
Executive Secretary

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. dma 1519X

Date received 6-1-51

Participation

NUGENT & NORGAARD
Box 1069
Helena, Montana

Name and address of applicant

Date May 15, 1951.

FILL IN THIS BLOCK

Date of application May 15, 1951.

Estimated cost $31,020.

Mineral or metal Zinc and Lead and Silver.

Percentage of Government participation 50%- $15,510

Location of mine Meadow Mine, Clancy, Montana.
(mine 2 miles north of Clancy).

Date of filing MF-100

DMA Docket Number, if available

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT (see attached sheet).

*1. Is applicant an individual, partnership, or corporation? Applicant is a partnership of
*2. If a partnership, state names and addresses of partners. Alfred E. Nugent and Henning Norgaard
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders. Helena, Montana.
*4. Describe the mining and general business experience of (a) the applicant, and (b) the person or persons who will manage the project. (see attached sheet)
*5. Are you the owner or the lessee of the property? Lessee.
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY (see attached sheet).

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION (see attached sheet).

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS (see attached sheet).

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and ~~belief.~~

NUGENT & NORGAARD
(Name of company)

By Alfred E. Nugent
(Signature of authorized official)

May 15, 1951.
(Date)

Partner.
~~(Title)~~

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

APPLICATION FOR AID FOR AN EXPLORATION PROJECT

(continued from Form MF-103)

APPLICANT

1-2.
Applicant is a partnership of Alfred E. Nugent and Henning Norgaard, both of Helena, Montana.

3. - - - - -

4.
Mining and business experience of applicant:
The applicants, who are also the managers of the operation, together combine all of the elements of experience in business, mining, geology, and supervision necessary to cope with the many and varied problems of a small mine.
Henning Norgaard has a background in practical mining and supervision as follows:

1929-1934	Miner at Bunker Hill and Sullivan, Kellogg Idaho.
1941-1948	Miner, shift boss, assistant foreman at Little Pittsburgh Mine of Denver Development Co., Kellogg, Idaho.
1948-1949	Foreman at Minah Mine at Wickes, Montana.
1949-1951	Partner and Superintendent of operations at the Meadow Mine at Clancy, Montana.

Alfred E. Nugent has a background in mining, engineering, geology, and business as follows:

1929-1933	Miner at Hecla Mine and at Sunshine Mine in Idaho.
1933-1937	University of Idaho- graduated in Geological Engineering.
1937-1939	Shift boss for Braden Copper Co. in Chile, S. A.
1939-1941	Mine lessee at Interstate Mine, Wallace, Idaho.
1941-1944	Shift boss for A. C. M. Co. at Butte, Mont.
1944-1947	Geologist for A. C. M. Co. at Butte, Mont.
1947-1949	Managing partner of Minah Development Co. at Wickes, Montana.
1949-1951	Managing partner at the Meadow Mine, Clancy, Montana.

5-6-7.
Nugent and Norgaard are lessees of the property. The lease is in good standing at the present time. A copy of the lease agreement is attached to this application as "Appendix A".

8.
Statements of assets & liabilities and of profits & loss are attached to this application as "Appendix B".

9.

Applicants are prepared to match 50% of the cost of the proposed project in the form of rental value of equipment, supervision and labor in accordance with Section 9 of Mineral Order 5.

10-19. THE PROPERTY

See attached "Appendix E", Report on the Meadow Mine.

THE EXPLORATION

20.

Exploration will be conducted for zinc-lead-silver ore. However, of additional interest to the project is the fact that the Atomic Energy Commission's engineer found some radioactivity associated with the ore; the nearby Haines Uranium Property and the Free Enterprise Mine have both a similar envirnment to that of the Meadow Mine.

The Meadow Mine is a hydrothermal vein type of deposit.

21.

Proposed work is for 130 feet of shaft and for 500 feet of drift work. Estimated time required to complete project is eleven months.

22.

For the geologic basis of the project please refer to Appendix E, Report on the Meadow Mine.

REQUIREMENTS AND COSTS

23.

For itemized tabulation of requirements and costs refer to Appendix C.

24.

A time schedule of the project has been made and is contained in Appendix D.

APPENDIX A.

LEASE AGREEMENTS

APPENDIX A

(to Application for Aid for an Exploration Project)

COPY OF LEASE AGREEMENT

This agreement, made and entered into this 3rd day of August, 1949, by and between Mrs. Kate Haab of Clancy, Montana, party of the first part, and Alfred E. Nugent of Helena, Montana, party of the second part,

WITNESSETH:

That whereas, the party of the first part is the owner of certain lands in Jefferson County Montana which may be valuable in mineral and she is desirous of having the same explored for mineral values; and

Whereas, party of the second part is desirous of entering upon the said premises for the purpose of exploring the same for its mineral value and in that connection wishes to be protected in its endeavors and desires a lease setting forth the terms under which it is to explore and operate.

Now therefore, for and in consideration of the sum of $1.00 and other good and valuable considerations passing from the party of the second part to the party of the first part and the mutual covenants and agreements hereinafter contained, it is hereby mutually understood and agreed by and between the parties hereto as follows:

1. The party of the first part agrees to lease, let, and demise unto the party of the second part upon the terms and conditions hereinafter set forth, the following described real property, situate, lying and being in the County of Jefferson, State of Montana to-wit:

All of Lot eight (8), all right, interest and titlte to Lot two (2), all of Lots three (3) and four(4), Section 34, Township 9 North, Range 3 West; and the first party will warrant and defend the title to said premises as against all persons claiming the same.

2. It is understood and agreed that any mining claims adjoining the property herein demised located by either of the parties hereto subsequent totthe date of this agreement shall be included in this lease and the one unpatented mining claim the notice of location of which is filed for record in the office of the County Clerek and Recorder of Jefferson County, Montana in book 46 and page 547 is also included in this lease agreement.

3. It is understood and agreed that the term of this lease shall be for seven years and six months. The party of the second part shall have the privilege and option of renewing the lease at the expiration of the seven years and six months for a like period of time and terms; provided that in the event of an assignment of this agreement the party of the first part must consent to an extension of this agreement.

4. It is understood and agreed that the party of the second part will enter upon the said premises on or before 15 days after the date of this agreement and commence work thereon, and it is further agreed that said work shall be conducted and prosecuted with reasonable diligence and second party will work at all times in such a manner as to effect at least 40 man shifts per calendar month during the life of this contract or its extension in the exploration and mining of minerals on the premises hereinabove demised.

5. It is understood and agreed that the party of the second part will pay a minimum royalty of Five Hundred and no/100 Dollars ($500.00) at the end of the first six months as compensation to the party of the first part for certain legal work performed in connection with the abstract of the property.

6. It is understood and agreed that the party of the second part will pay a royalty of ten per cent (10%) on the net smelter or custom mill return on all ore of $50.00 or less per ton and that said royalties shall increase one per cent (1%) for each Ten and no/100 Dollars ($10.00) per ton increase in the net smelter or custom mill return on ore sold from said premises up to and including the net returns of $200.00 per ton, above which $200.00 per ton net returns the royalty shall remain at twenty-five per cent (25%).

7. It is understood and agreed that net smelter or custom mill return as herein used shall be defined to mean the net amount received after deducting the following items: all truck or freight charges for hauling to the smelter or custom mill, all treatment charges, penalties and other charges which may be deducted by the smelter or custom mill; the smelter or custom mill to which ore is shipped shall be instructed to pay the royalties as herein provided unto the party of the first part.

8. It is understood and agreed that all royalties are to be based on the dry weight and net return of each separate lot as paid for by the smelter or custom mill.

9. It is understood and agreed that party of the second part will comply with the provisions of the Workmen's Compensation Act and will pay State and County mineral license taxes on the property and against the production therefrom during the life of this agreement provided only that the party of the first part will pay all taxes levied and assessed against her royalties received from ore sold from said premises and also all taxes against the leased premises.

10. It is understood and agreed that the party of the first part or her agents shall at all reasonable times be allowed to enter upon or into all of the parts of said leased premises for the purpose of inspecting and sampling the same and the work being done thereunder and to that end shall have the use of all windlasses, elevators, cages, ladders and other ways of ingress and egress.

11. It is understood and agreed that the party of the second part may perform any work of any character desired in the exploration and development or mining of the said premises, provided only that the same shall be done in a miner-like fashion and in the manner required by good mining, including timbering at all points where necessary and proper according to good mining practice.

12. It is understood and agreed that the party of the second part shall have the right to use so much of the surface of the premises herein leased for buildings and mining equipment as it shall desire and shall be allowed to dump the tailings upon said premises.

13. It is understood and agreed that the party of the first part may occupy all of said premises and operate the same as a farm but that her farming operations shall not interfere with the party of the second part in its mining operation in any particular, except the second party will keep the road open to the west side of the property, and the ditches and well now on the premises; buildings shall not be moved but second party may mine and stope under all buildings.

14. It is understood and agreed that in the event that the second party should use or destroy any of the meadow west of the Great Northern Railway in Lot 3, Section 34, Township 9 North, Range 8 West, the second party will pay the first party at the rate of $100.00 for each acre or part thereof used in connection with the mining operations.

15. It is understood and agreed that second party may pursue any vein encountered in the premises herein demised beyond the end lines or side lines of the premises herein demised into any other property owned by first party and in the event second party should desire to use any of said lands not herein demised for shafts and workings it will pay first party $100.00 per acre for each acre of surface land used in connection with said mining operations beyond the demised premises.

16. It is understood and agreed that second party will fence all shafts and workings to protect livestock which may be running at large.

17. It is understood and agreed that this agreement shall be read and construed as an option lease and may be cancelled at any time by the party of the second part, upon thirty (30) days notice to the party of the first part.

18. It is understood and agreed that the party of the second part shall not be placed in default for its failure to keep any of the terms and provisions of this agreement when prevented from carrying out such terms or provisions by reason of strikes, floods, or any condition or happening of any other event over which it has no control.

19. It is understood and agreed that in the event the party of the second part or its assigns shall fail to prosecute the work hereunder and continue the same with reasonable diligence as aforesaid or to pay or cause to be paid the royalties as herein specified to be paid or fails to do and perform any of the other covenants or agreements herein contained and required to be done and performed by the party of the second part, the party of the first part may at her option give the party of the second part written notice that she will cancel this lease and the party of the second part shall have thirty (30) days after the receipt of such written notice to make good the defaults therein alleged; And in the event that the said default set forth in said written notice is not made good within thirty (30)

days then and in that event this lease shall be of no further force and effect and the same shall become terminated and the party of the first part shall have the right to the immediate possession of the said premises and each and every part and portion thereof.

20. It is understood and agreed that in the event this lease should be cancelled as hereinabove provided, or the party of the second part should determine that it no longer desires to proceed with operations hereunder, second party shall have ninety (90) days in which to remove any machinery, tools, or equipment, hoists, or other materials placed upon the property by it whether fastened thereto or otherwise provided that all payments due from the second party to first party on royalties or damage are paid in full and provided that all buildings and one pump shall be left upon the property.

21. That party of the second part agrees to save first party harmless from all damages either to persons or property, growing out of said mining operations, agrees to post notices in conspicuous places on said described property in plain English that mining operations are being carried on by second party as lessee and not as agent of first party, and agrees to do the annual representationwwork on all mining claims either at present or in the future coming under the scope and purview of this lease, and to file the annual affidavit of such work required by law; that all mining shall be done in a good workmenlike and minerlike manner to preserve the future workings thereof, and workings shall be timbered wherever necessary.

22. It is understood and agreed that this contract shall be considered and treated as binding upon all the parties hereto, their heirs, executors, personal representatives and assigns, and that the party of the second part may at any time make an assignment of this contract provided only that the terms in this agreement are fully carried out by its assigns.

IN WITNESS WHEREOF the parties hereto have hereunto subscribed their names in triplicate, the day and year in this agreement first hereinabove written.

KATE HAAB
PARTY OF THE FIRST PART

ALFRED E. NUGENT
PARTY OF THE SECOND PART

STATE OF MONTANA)
; ss.
County of Jefferson)

On this 3rd day of August, 1949, before me Fred L. Haab, a Notary Public for the State of Montana, personally appeared Kate Haab and Alfred E. Nugent, known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they have executed the same. In witness whereof, I have hereunto subscribed my name and affixed my official

seal.

FRED E. HAAB
Notary Public for the State of Mont.
Residing at Clancy, Montana.
My Commission Expires March 25, 1950.

- - - - - - - - - - - - - - - - -

SUPPLEMENTARY AGREEMENTS

There are three other agreements which bear upon the present status of the lessees, Nugent & Norgaard. They are:

1. An agreement dated the 3rd of August 1949 by which Alfred E. Nugent conveyed an undivided one-half interest in the above Haab-Nugent agreement to Henning Norgaard.

2. An agreement dated July 26, 1949 whereby Alfred E. Nugent agreed in favor of J. C. Archibald, now of Nogales, Arizona, as follows: . . . "In consideration of your services in connection with this property I wish to advise you that, in the event that I or my assignee or assignees commence the operation of a mine upon the above (Haab) property for the production of silver or lead or other metals, I, Alfred E. Nugent, will pay, or cause to be paid to you, ten per cent(10%) of the net profits before income taxes derived from such operation, calculated in accordance with usual and customary mine accounting methods in use in the Helena, Montana area, with the first payment to be made on March 1st of the year succeeding the year profits are first derived from such operation."

3. An agreement dated March 26, 1951 was made between the J. C. Archibald, of the above agreement, and Alfred E. Nugent and Henning Norgaard. This agreement provides for the purchase of the Archibald interest, as follows:
"J. C. Archibald hereby agrees to release all of his right, title and interest in and to said (Haab) property or a share in the profits arising from the operation of said property for the sum of $1,000 payable within one year of the date of this agreement; 2% royalties on all ore extracted from the property is to be paid to him during said one year to apply upon said $1,000. . . . It is understood and agreed that this agreement shall be read and construed as an option agreement and in the event the parties of the second part (Nugent & Norgaard) do not desire to continue the purchase of the said premises at any time they may cease making payments thereunder without further obligation on their part."

APPENDIX B.

STATEMENT OF ASSETS AND LIABILITIES

and

STATEMENT OF OPERATION AND OF PROFIT AND LOSS

1950.

APPENDIX B.

STATEMENT OF ASSETS AND LIABILITIES

December 31, 1950.

Assets:

Cash on Hand, First Natl. Bank & Tr. Co.		$ 188.34	
Cash Deposits:			
Industrial Accident Board		$125.00	
Montana Power Co.		900.00	1,025.00
Buildings	$2,438.96		
Less Reserve for Deprec.	243.90		2,195.06
Machinery & Equipment	$1,057.55		
	105.75		951.80
Mine Development			3,381.14
TOTAL ASSETS			$7,735.34

Liabilities & Net Worth:

Accounts Payable (A. S. & R. Co.)		17.84
Reserve for Depletion		722.88
Alfred E. Nugent (Partner) Investment	$7,040.32	
Less withdrawing account	2,809.73	
		4,230.59
Henning Norgaard (Partner) Investment	$4,965.32	
Less withdrawing account	2,201.29	
		2,750.03
TOTAL LIABILITIES & N.W.		$7,735.34

(continued)

APPENDIX B. (continued)

STATEMENT OF OPERATION and OF PROFIT AND LOSS FOR 1950.

Production:

Ore Shipped, Lots #1-13. 82.3135 Dry Tons

Gross value:				
Silver, Oz. (paid for)	12,803.35	$11,523.79		
Lead, Lbs. (paid for)	2,307	290.49		
Zinc Lbs. (no pay)	12,825	------		
Total gross value				$11,814.28
Less:				
Royalty, Mrs. Kate Haab			2,066.48	
Hauling			165.11	
Treatment & assaying			853.56	3,085.15
Net smelter returns				$ 8,729.13
Less:				
Development ore, Lots #1-5, credited to mine development costs				3,909.91
Income: Mining operations, Lots #6-13,				$4,819.22

Mining costs:

Supplies	$625.80		
Equipment rentals	815.90		
Gasoline & oil	352.89		
Electric power	288.69		
Assaying	6.00		
Liability & acc. insur.	252.91		
Repairs	258.09		
Administrative costs	87.98	$2,688.26	
Depreciation		349.65	
Depletion (15% on $4,819.22)		722.88	
Total mining costs			$3,760.79
Net profit			$1,058.43
Miscel. income			50.00
Total profit			$1,108.43

Distribution:	Alfred E. Hugent	50%	554.22	
	Henning Norgaard	50%	554.21	$1,108.43

APPENDIX C.

COSTS OF PROJECT

APPENDIX D.

TIME SCHEDULE OF PROJECT

APPENDIX C.

Tabulation of Costs of Project:

	Shaft	Drifts	Total
a. Labor: (1.) Shaft- 8 miners $16 per shift plus taxes, insur. and time & half over 6 days per week.	$ 3,787		
b. (2.) Drifts- 2 miners at $13 per shift plus taxes, etc.		$ 5,660	$ 9,447
b. Supervisors- one at $500/month	1,300	3,450	4,750
c. Repairs- none	----	----	-----
d. Construction- none	----	----	-----
e. Cost of equipment- none	----	----	-----
f. Cost of rental equipment- none	----	----	-----
g. Rental value of equipment owned by operator.	2,366	6,065	8,431
h. Cost of materials & supplies	1,729	3,875	5,604
i. Cost of power & shaft preparation	1,888	1,000	2,788
Total costs	$10,970	$20,050	$31,020

Government share of project $15,510

APPENDIX D.

Time Schedule of Project:

	Time	Cost
Shaft: Preparation and sinking 130 feet	4 mos.	$10,970
Drifts: Drifting 500 feet.	6 mos.	20,050
Totals	11 mos.	$31,020

Cost to government $15,510

REPORT

on the

MEADOW MINE

Clancy, Montana

By

Alfred E. Nugent

April 1951.

APPENDIX E.

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ILLUSTRATIONS

Plate I Index Map of Clancy Mining District.

Plate II. Plan Map of Meadow Property.

Plate III. Section through D. D. Holes 1, 2, & 3.

Plate IV. Plan Map Showing Location of D. D. Holes & Buildings.

Plate V. Longitudinal Section Showing Mine Development.

Plate VI. Shipments of Crude Ore from Meadow Mine.

REPORT ON THE MEADOW MINE

Clancy, Montana

INTRODUCTION

The Meadow Mine is located in the Clancy Mining District of Jefferson County, Montana. This district is contained in an area about three miles wide and five miles long lying in T 8 N, R 3 W. The central point of the area is Clancy, a village located along U. S. Highway 91 about 10 miles south of Helena. (see index map, Plate I).

The principal mines of the district have been the Liverpool, Legal Tender, Little Nell, Free Coinage, and the King Solomon. They were discovered and worked in the 1880's and 1890's, but have been nearly forgotten in late years. The Liverpool produced more than $1,250,000 and the Legal Tender more than $2,000,000 in silver and lead. Most abundant metal of the ore was zinc, but having no market value it was considered to be gangue. These mines were developed by shafts from 500 to 800 feet deep. The rich sulphide ores were deposited in veins cutting through the quartz monzonite (locally called granite) of the Boulder Batholith.

All of the old mines are abandoned and inaccessible now. According to the meager information available, the ore shoots were never bottomed, although the silver values declined to the point where the crude ores were not profitable to mine at that time. It is possible that by using modern flotation some of these baser ores would now be profitable to mine.

The only mines in the district being operated now are the newly-discovered Haines Uranium Property, being developed by Newmont Mining Co., and the Meadow Mine by Nugent & Norgaard.

LOCATION AND HISTORY OF THE MEADOW MINE

The Meadow Mine is located on the Haab Ranch about two miles north of Clancy. It is on the valley floor alongside Prickley Pear Creek and the Butte branch of the Great Northern Railway. The mine is not more than 400 feet from U. S. Highway 91 between Butte and Helena (see Plate II).

The Meadow vein was'nt discovered during the years of greatest activity of the district because it was covered by valley debris. It was found accidentally in 1956 when the Winston Bros. gold dredge dug up rich fragments of the vein from bedrock and deposited them on the tailing piles. The discovery excited much local interest, but the owners made no attempt to lease the ground until thirteen years later.

In 1949 the North Range Mining Co. of Negaunee, Michigan secured a lease on the property through its local manager, J. C. Archibald of Helena. The ground was diamon-drilled with inconclusive results- some holes showed rich ore, others little or no vein structure. Because of this and of the uncertain amount of water to be encountered in mining operations exploration was suspended and the lease surrendered.

Later in 1949 Alfred E. Nugent, who had directed the drilling program for North Range Mining Co., and Henning Norgaard, both of Helena, took a lease on the property and commenced to sink a shaft. The property was named the "Meadow Mine" because of its unique location.

Nugent and Norgaard sunk the shaft to the 90-ft. level in 1949 and 1950 and have since steadily developed the mine by drifts and raises. Progress has been retarded by the lack of adequate capital.

During this development period 130 tons of ore containing 5,116 pounds of lead, 20,088 pounds of zinc, and 17,708 ounces of silver have been shipped to the smelter. Returns for lead and silver have amounted to $16,091, but no pay has been received for the zinc.

OWNERSHIP

The Meadow Mine is located on the Haab Homestead, which was taken up prior to 1916. However, because the homestead does not cover the entire projection of the vein two unpatented claims have been located; these claims, the Meadow and the Joe Pete, and the Haab homestead are all owned by Mrs. Kate Haab of Clancy (see Plate II). The Hennepin patented claim belongs to another owner.

Nugent and Norgaard, a partnership, have a 15-year lease, dated August 1949, on the property. Royalties to be paid to the owner are on a sliding scale ranging from 10% to 25% and vary with the value of the ore; royalties in 1949-1950 averaged 19%. In addition to this there is a 2% royalty, in effect for the year April 1951 to April 1952, which applies toward a $1000 purchase price on a minority interest in the lease; this interest amounts to 10% of net smelter returns during the life of the lease and is held by J. C. Archibald of Nogales, Arizona.

EQUIPMENT AND SERVICE

The Meadow Mine is well-equipped for immediate mining and development needs. An automatic Pomona turbine pump easily handles the 65-gal. per minute flow of water now coming into the mine. A 250 cubic-foot Sullivan compressor, a 100-gal. per min. Pacific pump, a 5-H.P. Austin fan, an Anaconda air hoist with brake, a tugger hoist, pickup truck, and stopers, drifter, jackhammer comprise the major part of the equipment.

Surface buildings consist of headframe with ore and waste bins, hoist house, compressor house, and temporary warehouse. It is planned to build a small change house and permanent warehouse during the summer months of this year.

Power is provided by the Montana Power Co. from a transmission line 300 feet from the mine. A substation at the mine transforms the 7200-volt current to 440-volt current for use of compressor, pump and fan motors. A smaller transformer cuts this voltage to 110-volts for mine and surface lights.

An ore trucker hauls the mine ore to the East Helena smelter 7 miles away at a rate of $2,00 per ton. The smelter pays for lead and silver, but not for zinc; base smelting charge is $8.00 per ton.

GEOLOGY

The geology of the Meadow Mine is similar to that of the older mines of the district. The vein occupies a fault fissure in the quartz-monzonite rock of the Boulder Batholith. The development work to date shows the average strike of vein

to be S 85 deg. West and the dip to be nearly vertical; width of vein varies from six inches to two feet. Ore shoots tend towards a lensy, though not pockety, character.

The ore minerals are sphalerite, galena, tetrahedrite, argentite, and pyrargyrite in a gangue of quartz, chalcedony, ankerite and minor pyrite and arsenopyrite. The presence of minute amounts of radioactive minerals, especially associated with the chalcedony, has been demonstrated by recent tests made by an engineer of the Atomic Energy Commission.

Minerals were deposited during two periods, both during late Tertiary age. During the first period quartz and sulphides of silver, lead, zinc and iron were deposited along the fault fracture. Some movement occurred along the vein during this mineralization, but most of it took place after sulphide mineralization had ceased, thereby brecciating the ore. This breccia was later re-cemented and in some places replaced by chalcedony of a second period of mineralization.

Structural control- by changes in strike and dip and amount of fault gouge- seems to have directed local and possibly areal deposition of ore. Of course, such variations probably represent existing evidence for pre-mineral movements along the fault plane.

Two oreshoots have been found thus far in the development of the mine, but the limits of each have not been found and it is possible that they may be branches of one large shoot. The size of the oreshoots is therefore an unknown that must wait for lateral and vertical exploration. The oreshoots of the neighboring Liverpool Mine were stoped for a length of

200 to 600 feet and for a depth of 200 to 750 feet below surface.

DEVELOPMENT

DIAMOND DRILLING:

In June 1949 the North Range Mining Co. drilled nine diamond-drill holes at what is now the Meadow Mine. All were drilled from surface, through the seven-foot overburden of dredge tailings and gravel, into the underlying granite. The target for the first hole was an area some forty to fifty feet beneath the westernmost tailing pile containing ore fragments. The plan was to locate the vein by the first hole, determine the dip by a second hole drilled under the first, (see Plate III), and then determine strike by one or more holes at intervals to east and west of the first hole, (as shown by Plate IV).

The results of the drilling were not conclusive. Cores from three holes contained good values, but other holes cored badly or did not encounter recognizable vein structure. The ninth and last hole encountered some vein material before coring was started but was drilled through very solid granite where the projection of the vein was expected to be found. Because of this information another hole should have been drilled, but it was not authorized and the whole drilling program was stopped.

Subsequent mine development has given a clearer understanding of the situation, shown on Plate IV. It is now

evident that the suggested strike and dip on the basis of the first four holes were erroneous and that only three of the holes may have been drilled far enough to pass through the vein.

Some facts concerning diamond-drilling of this type of vein emerge from this experience. It is recognized that diamond-drilling is the easy and most satisfactory way to locate the buried vein, but is not reliable for figuring average width or grade of ore. Three holes are not enough to determine the strike and dip of the vein accurately for the planning of the mine development. And lastly, those holes which do not pierce the anticipated structure should be drilled far enough before being abandoned to allow for local variations in strike of dip.

MINE DEVELOPMENT:

The Meadow shaft was sunk as a 70-degree incline shaft for 50 feet below surface, then vertically to a depth of 100 feet below surface. Small stations were cut at the 45-foot and the 90-foot levels, short crosscuts driven to the vein, and drifting done west of the shaft on the 45-foot level and both east and west on the 90-foot level. One development raise was driven between levels west of the shaft and some stoping done from it. One exploratory raise was driven above the 90-foot level east of the shaft. Development work to date is shown by Plate V which is a longitudinal section along the plane of the vein.

MINING

Mining problems have not been so serious as might have been expected. Shortly after the shaft had been sunk below bedrock the surface water was sealed off by pouring a concrete shaft ring at bedrock elevation and by boarding around the shaft from that elevation to surface by means of water-tight planks. The water from the mine workings comes from the vein but has not amounted to more than 70 gallons per minute yet. It is pumped to surface by a deep-well turbine pump located on the 45-foot shaft station; this pump will handle four or five times the present volume of water.

Drifts are timbered with 5-foot sets which leave a passageway 4 feet by 6 feet in the clear. The granite country-rock stands well except that immediately adjacent to the vein; for that reason comparatively light timbering is sufficient.

Stoping is done by the horizontal-cut and fill method. The waste is blasted first for fill and the ore stripped afterwards; the ore produced by this sequence requires very little sorting.

The profit per ton of ore stoped is high because of the relatively high smelter return; net smelter returns of all ore shipped in 1949 and 1950 averaged $129 per ton 9(see Plate VI, Ore Shipments from Meadow Mine). However, most of the ore shipped has come from development rather than stoping and no stoping costs are yet available.

RECOMMENDATIONS

The lateral development of the mine should be continued

by extending the drifts on the 90-ft. level both east and west. There is good reason to believe, because of ore on tailing piles east of present development, that another shoot of ore of good width and grade lies under the power substation or beyond.

However, with a view toward developing larger ore reserves the main objective should be the sinking of the shaft to the 200-ft. level and thence drifting east and west on that level. Blocking out larger reserves will not only assure a larger daily production but will also make it feasible to consider building a small flotation mill to separate the lead and zinc sulphides. It will be noted by referring to Plate VI that some 20,000 pounds of zinc worth $3,800 gross value have been shipped but lost to the mine so far as profit is concerned. A mill would undoubtedly save a large part of this loss.

But- until financial assistance is obtained whereby additional miners can be put to work the Meadow Mine cannot attain a steady and profitable production.

Alfred E. Nugent
Alfred E. Nugent

Helena, Montana
April 1951.

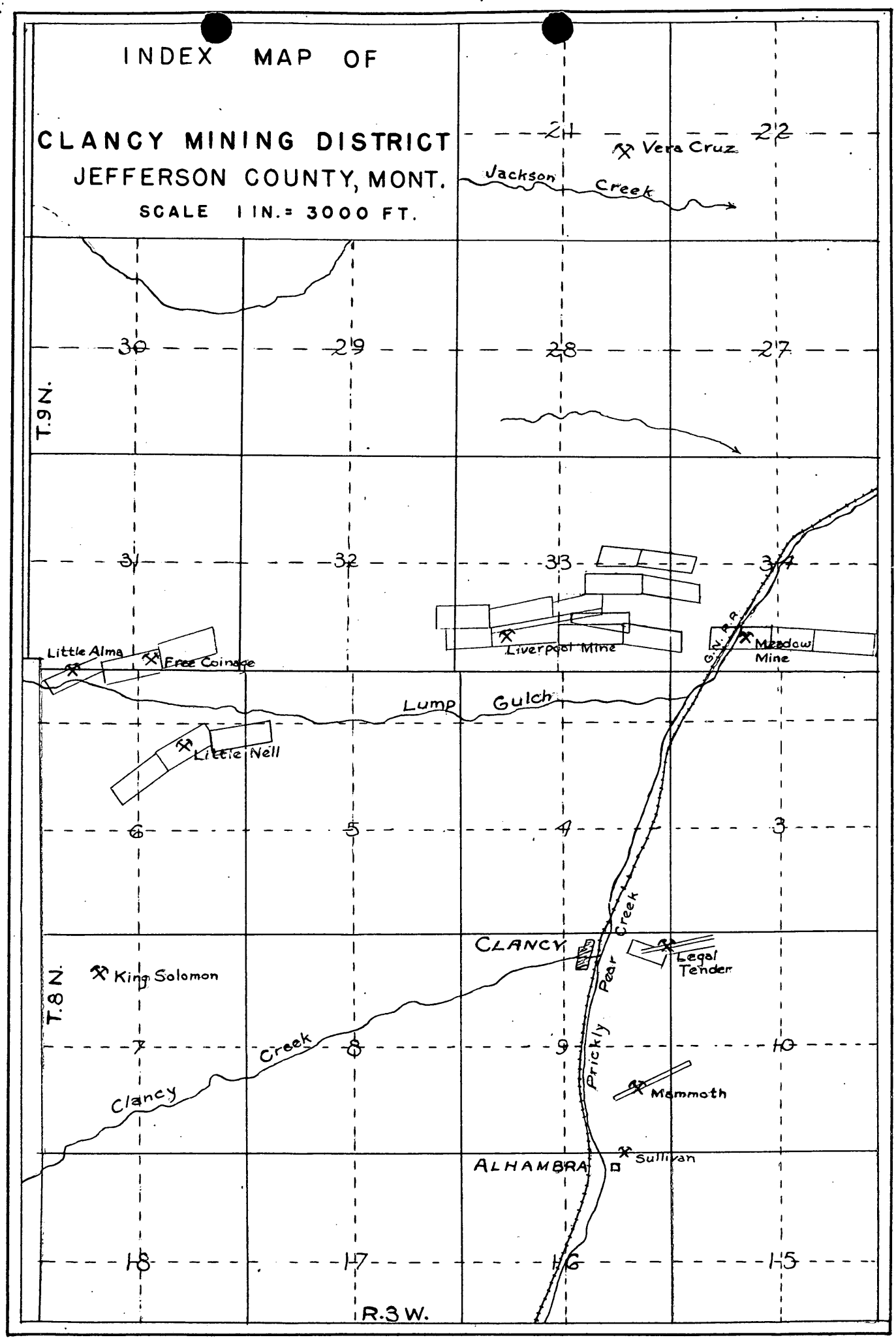

INDEX MAP OF
CLANCY MINING DISTRICT
JEFFERSON COUNTY, MONT.
SCALE 1 IN. = 3000 FT.
Vera Cruz
Jackson Creek
T.9 N.
Little Alma
Free Coinage
Liverpool Mine
Meadow Mine
Lump Gulch
Little Nell
CLANCY
Legal Tender
King Solomon
T.8 N.
Prickly Pear Creek
Clancy Creek
Mammoth
ALHAMBRA
Sullivan
R.3 W.

PLATE I

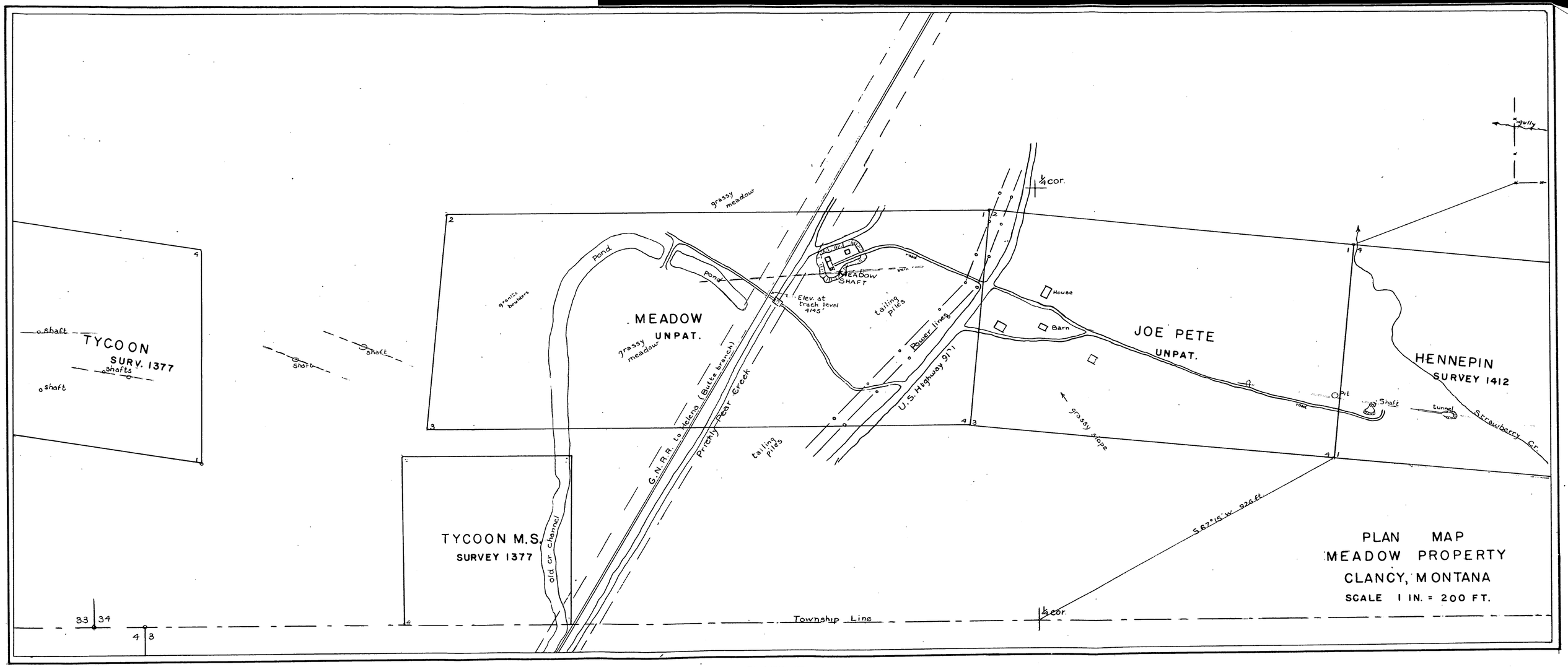
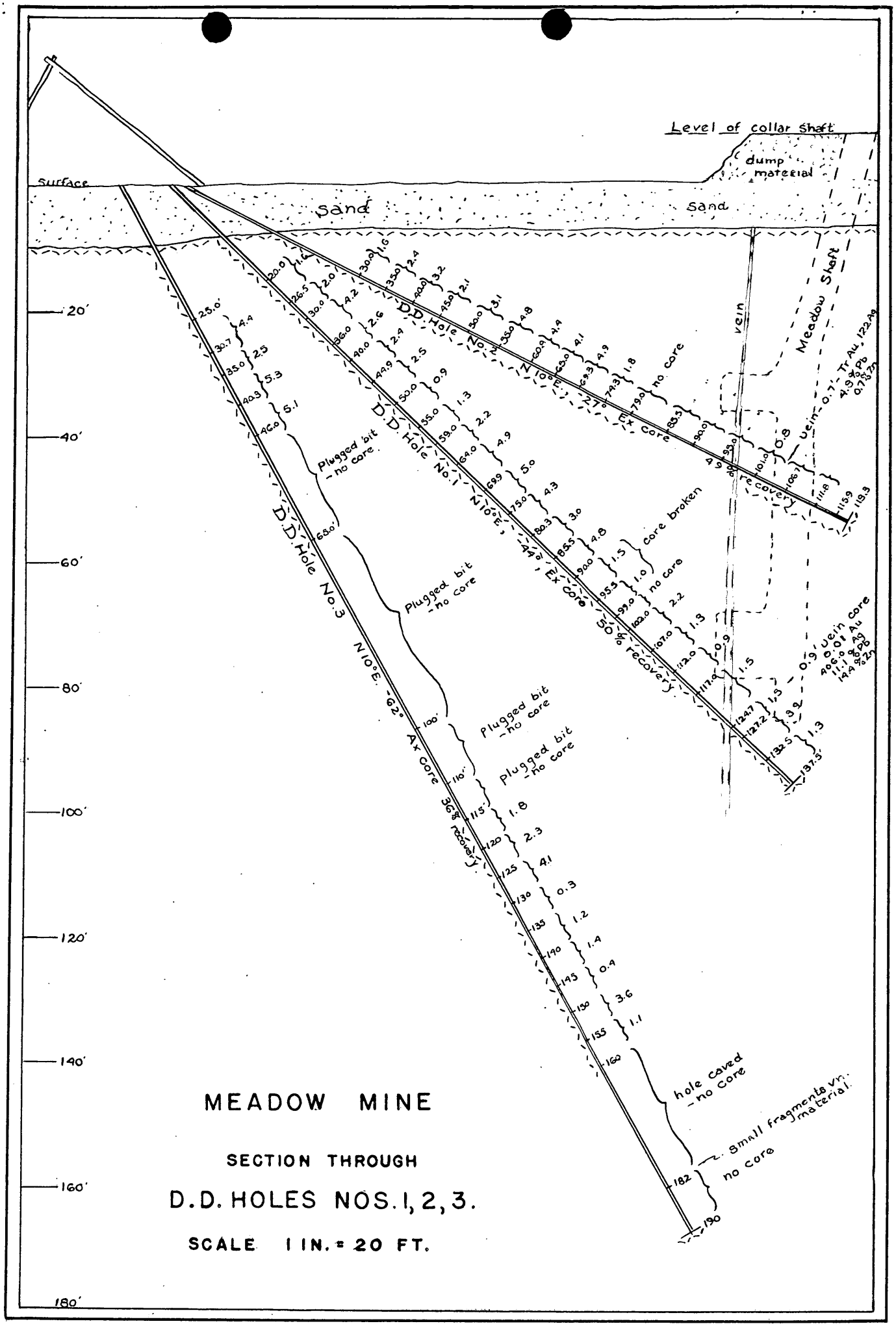

PLAN MAP
MEADOW PROPERTY
CLANCY, MONTANA
SCALE 1 IN. = 200 FT.
TYCOON
SURV. 1377
shaft
shafts
TYCOON M.S.
SURVEY 1377
MEADOW
UNPAT.
grassy meadow
granite boulders
Pond
MEADOW SHAFT
Elev. at track level 4145'
tailing piles
Power line
House
Barn
JOE PETE
UNPAT.
HENNEPIN
SURVEY 1412
Pit
Shaft
tunnel
Strawberry Cr.
gully
grassy slope
road
G.N. R.R. to Helena (Butte branch)
Prickly Pear Creek
U.S. Highway 91
old cr. channel
S 62°15' W 924 ft.
Township Line
1/4 cor.
33 34
4 3

PLATE II



MEADOW MINE

SECTION THROUGH

D.D. HOLES NOS. 1, 2, 3.

SCALE 1 IN. = 20 FT.

PLATE III

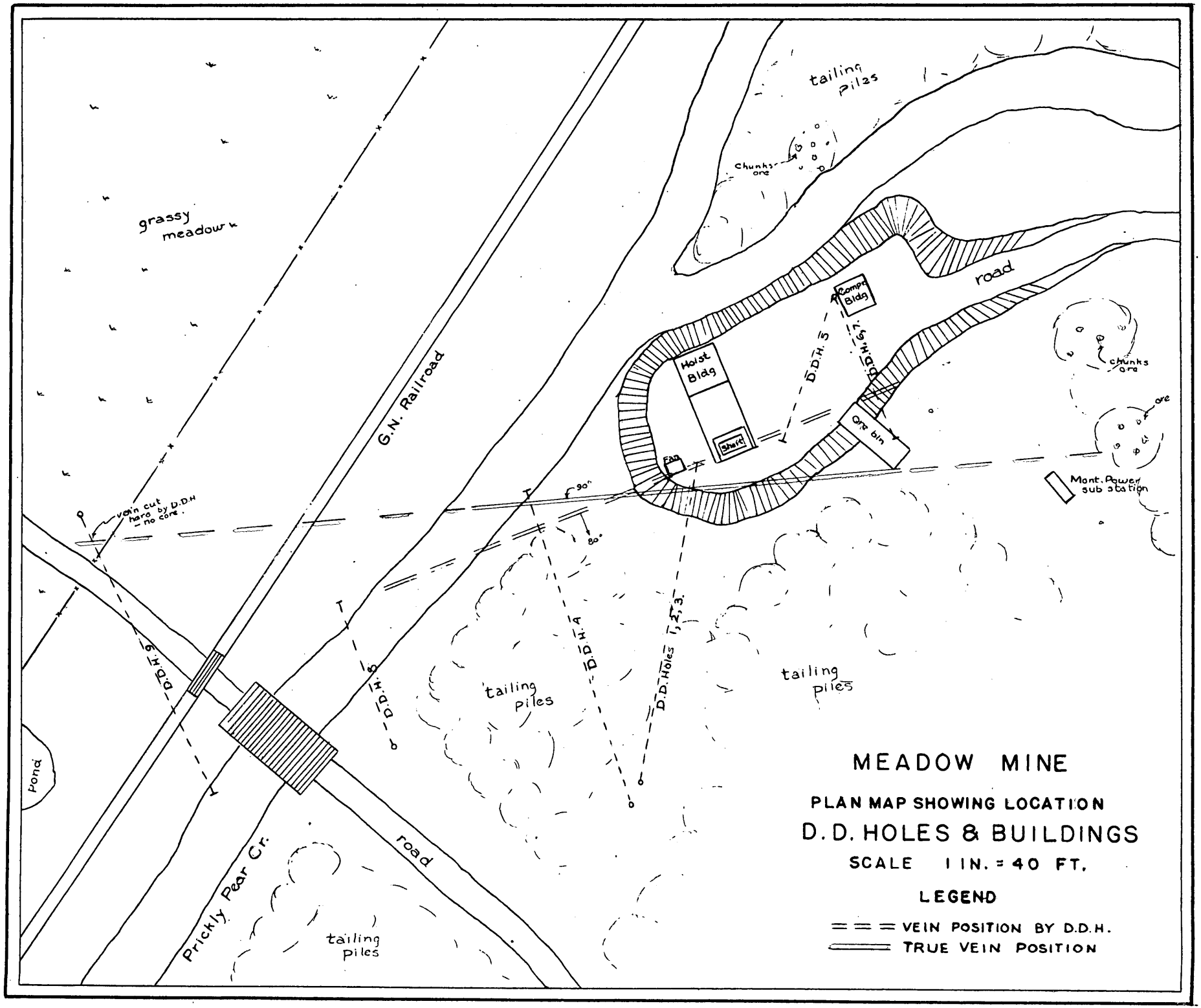

grassy meadow
G.N. Railroad
tailing piles
Chunks ore
road
Camp Bldg
Hoist Bldg
Shaft
Fan
Ore bin
D.D.H. 5
D.D.H. 7
chunks ore
ore
Mont. Power sub station
vein cut here by D.D.H. - no core.
90°
80°
D.D.H. 9
D.D.H. 6
D.D.H. 4
D.D. Holes 1, 2, 3.
tailing piles
tailing piles
Pond
Prickly Pear Cr.
road
tailing piles
MEADOW MINE
PLAN MAP SHOWING LOCATION
D. D. HOLES & BUILDINGS
SCALE 1 IN. = 40 FT.
LEGEND
VEIN POSITION BY D.D.H.
TRUE VEIN POSITION

PLATE IV

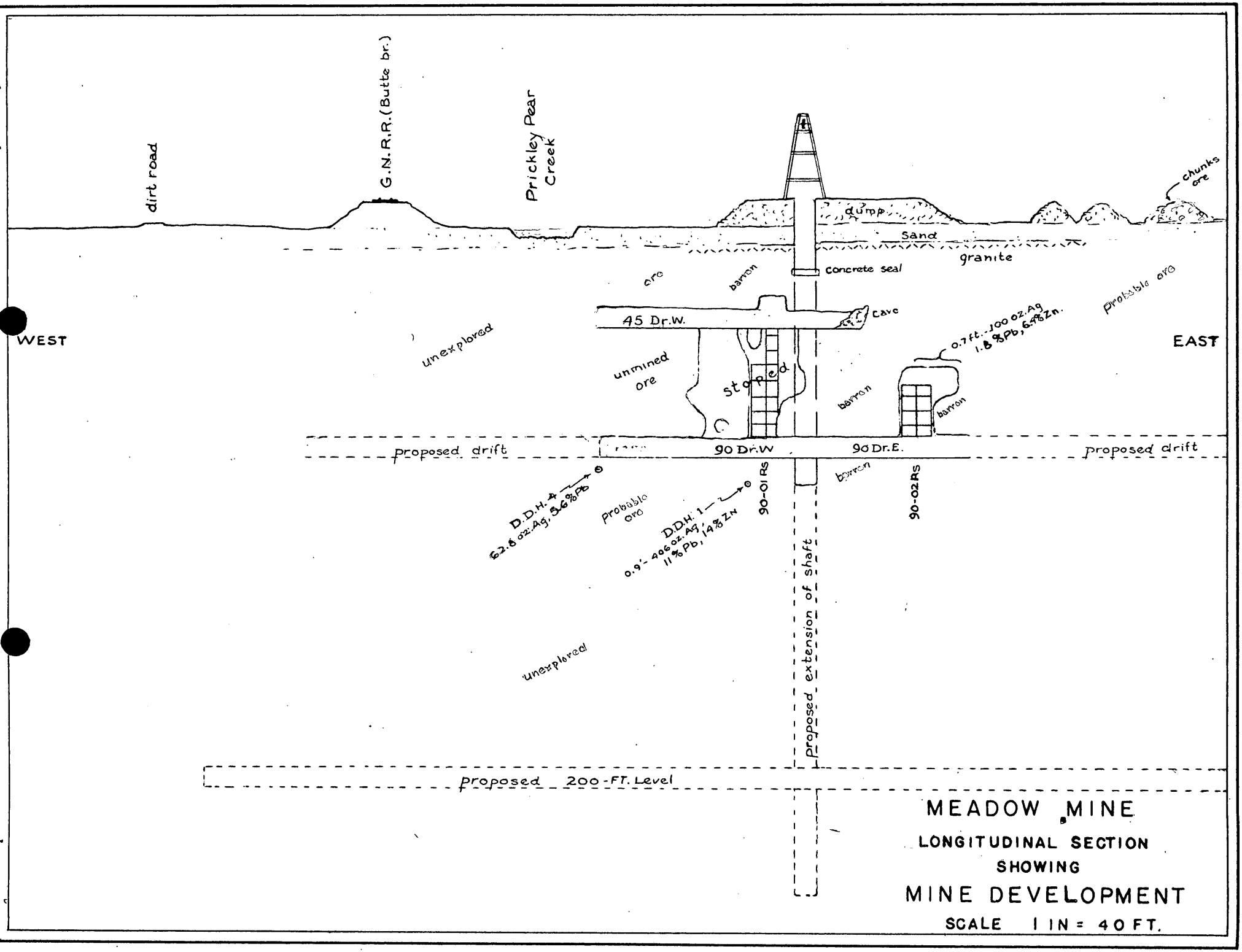

dirt road
G.N.R.R. (Butte br.)
Prickley Pear Creek
dump
sand
granite
chunks ore
concrete seal
ore
barren
45 Dr.W.
cave
WEST
EAST
unexplored
unmined ore
stoped
barren
0.7 ft.-100 oz. Ag 1.8% Pb, 6.4% Zn.
probable ore
proposed drift
90 Dr.W
90 Dr.E.
proposed drift
D.D.H. 4
62.8 oz. Ag, 5.6% Pb
probable ore
DDH. 1
0.9'-406 oz. Ag, 11% Pb, 14% Zn
90-01 RS
90-02 RS
barren
proposed extension of shaft
unexplored
proposed 200-FT. Level
MEADOW MINE
LONGITUDINAL SECTION
SHOWING
MINE DEVELOPMENT
SCALE 1 IN = 40 FT.

PLATE V

PLATE VI

SHIPMENTS OF CRUDE ORE FROM MEADOW MINE to East Helena Smelter

1949 to May 1951.

Date	Lot No.	Dry Wt. lbs.	Silver oz/T.	Lead %	Zinc %	Smelter Ret. (incl. royalty)	Location
Nov. 1949.	1.	1,954	247.2	5.8	14.4	$ 192.59	Tailing piles.
Dec. "	2.	3,988	199.7	3.7	9.2	309.18	45 DW
Dec. "	3.	7,468	78.8	1.6	5.0	201.08	45 DW
Jan. 1950.	1.	4,232	171.1	4.0	9.4	284.96	45 DW
Mar. "	2.	30,668	163.8	2.8	7.8	1996.71	90 DW
Mar. "	3.	5,670	168.3	3.1	6.4	367.06	90 DW
Apr. "	4.	16,530	188.7	4.6	9.7	1276.36	45 DW
May "	5.	12,204	183.5	3.4	11.2	903.20	90-01 Rs.
May "	6.	4,028	155.3	5.5	9.0	237.42	90-01 Rs.
June "	7.	11,560	174.3	5.2	6.4	777.86	45-01 Stope.
June "	8.	6,480	177.8	3.5	10.4	429.67	90-01 Rs.
July "	9.	19,955	148.7	3.0	7.5	1182.83	90-01 Rs.
Aug. "	10.	16,548	168.1	3.7	5.8	1123.63	90-01 Rs.
Oct. "	11.	6,919	163.3	3.5	8.9	442.12	90 DW
Nov. "	12.	15,664	222.9	5.2	8.4	1476.94	90-01 Stope.E.
Dec. "	13.	15,097	59.5	1.0	4.0	296.85	90 DE
Jan. 1951.	1.	9,948	152.1	2.7	8.4	590.12	90-02 Rs.
Feb. "	2.	11,874	154.7	3.0	9.9	736.69	90-01 Stope W.
Mar. "	3.	11,494	90.1	2.2	8.5	373.95	90-01 Stope W.
Mar. "	4.	24,511	57.1	1.5	5.3	474.22	90-01 Stope W.
Apr. "	5.	24,771	91.3	1.7	7.9	843.05	45 DW.
Totals		261,563 lbs.				$14516.49	

MINE PRODUCTION BY YEAR

Date	Dry Wt. lbs.	Silver oz.	Lead lbs.	Zinc lbs.	Gross Value	Charges	Royalty	Net Smelter
1949	13,410	887	155	1,021	$ 815.	$ 112.	$ 135.	$ 568.
1950	165,555	12,803	2,307	12,825	11,814	1,019	2,066	8,729
To May 1951	82,598	4,005	1,653	6,238	3,467	449	418	2,199
Totals	261,563	17,695	4,115	20,084	$16,096	$1,580	$2,619	$11,496