DMEA Form 1

DEFENSE MINERALS EXPLORATION ADMINISTRATION
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DMEA Docket No. 4470

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DMEA Form 7
(12-56)

700

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| 1/4/57 | Knouse | 700 |
| 1/4 | Ellis | 700 |
| 1/7 | Selfridge | 130 |
| 1/7 | [illegible] | 110 |
| 1/7 | Mittendorf | 100 |
| | | 225 |

JAN 7 1957

Mr. Roy O. Park
Seneca Mines, Inc.
4722 Broadway
Kansas City 12, Missouri

Re: Docket No. DMEA-4470 (Uranium)
Diamond Claims, et al.
Boulder County, Colorado

Lamb
Kiilsgaard

Dear Mr. Park:

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

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

Careful study of all our information, although noting some uranium mineralization was reported on your claims, indicates that the probability of disclosing significant ore reserves on your property is not sufficiently promising to justify Government participation. We regret to advise you that, under these circumstances, your application for exploration assistance is denied. Such denial, however, is made without prejudice to the property. If future work on your property reveals evidence which could materially alter this opinion, we will be pleased to consider a new application.

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

Sincerely yours,

C. O. Mittendorf (for)

Administrator

FLKnouse/izm 1-4-57
cc to: DMEA Field Team, Reg. III (2)
JOHosted, Rm. 3210, GSA
JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
Operating Committee
Admr.'s Reading File
Code 700
Mr. Knouse

R.C.

8623

Docket
700
F. L. Thorpe
Ellis

January 4, 1957

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-4470

Commodity: Uranium

Applicant: Seneca Mines, Inc.
4722 Broadway
Kansas City 12, Missouri

Property: Consists of 17 contiguous unpatented lode mining claims - Diamond Nos. 1, 2, & 3; Rocky Nos. 1, 2, 3, & 4; Hatchel Nos. 1, 2, 3, 4, & 5; Manhattan Nos. 1, 2, 3, & 4; and Rona No. 1 in sec. 3, T. 1 N., R. 72 W., and secs. 33, 34, and 27, T. 2 N., R. 72 W., 6th P.M., Boulder County, Colorado.

Property Rights: The property is leased by the Operator from the Master Corporation and is covered by a lease dated June, 1956.

Date of Application: September 12, 1956

Work Proposed: To explore for uranium-bearing veins in theoretically favorable shear zones in Precambrian Boulder Creek granite by means of (1) excavating overburden and trenching with a bulldozer and ripper to remove 2,000 cubic yards of rock and soil, and (2) explore veins by core drilling 5,000 feet of hole to a depth of 200 feet.

Uranium mineralization of ore grade was reported found in three pits on the property. Analyses of ten samples from these areas ranged from 0.15% to 0.73% $U_3O_8$, and a radiometric survey of the property showed various small anomalous areas. Access roads have been constructed and prospect pits excavated on the property.

Cost of Proposed Work: (unit cost basis)

| | |
|---|---|
| Trenching - 2,000 cubic yards rock excavation @ $2.25/cu. yd. | $4,500.00 |
| 5,000 ft. core drilling @ $7/ft. | 35,000.00 |
| Estimated Cost of the Project ..... | $39,500.00 |
| Government Participation @ 75% ..... | $29,625.00 |

Field Team Report - Dec. 6, 1956 - [illegible]
by Frank B. Moore, USGS & D. E. Redmon, USBM:

The property has been prospected and explored by an unknown number of trenches. The area proposed for exploration has been explored by four trenches which are cut in Boulder Creek granite that forms a body 1 to 2 miles wide and 5 miles long, extending northward from the

property. Geological mapping of the area shows a pegmatite 1 mile long by one-fifth mile wide cropping out about one-quarter mile east from the property.

The area exposed by the trenches contains many small pegmatite dikes 1 to 6 feet wide. Uranium occurs in some of the pegmatite dikes but appears to be in small pockets especially in the biotitic areas.

It is concluded that uranium is genetically related to small pegmatite dikes in which significant quantities of uranium cannot be expected to occur. However, should later evidence show that uranium has a hydrothermal origin or should uranium be found in large masses of pegmatite, the property might warrant further consideration. Therefore, it is recommended that the application for DMEA assistance be denied without prejudice to the property.

Comments of Commodity Specialists

USGS, W. P. Williams, December 26, 1956:

Feel certain that an exploration project would have poor chances of finding significant amounts of uranium ore, and am in agreement with recommendations of the Field Team for denial of application.

USBM, John E. Crawford, January 2, 1957:

Concurs with recommendations of Field Team.

Rare & Miscellaneous Metals Div., F. L. Knouse, January 4, 1957:

Exposures of uranium mineralization on the property occurs in small pockets in narrow small pegmatite bodies. The aggregate tonnage of the pegmatite bodies if they were of ore grade, would not add significant reserves of uranium ore. Pegmatites as a source of uranium production has been very disappointing. Should further work expose large pegmatites containing uniform mineralization, or large extensive shear zones containing encouraging uranium mineralization an exploration project may be justified. Under the circumstances, the application should be denied without prejudice to the property.

Conclusions:

A review of all our information relating to the proposed project indicates that the available information concerning the uranium potential of the property does not justify an exploration program. Therefore, the application should be denied without prejudice to the property.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

| OFFICIAL FILE COPY DMEA RECEIVED JAN 3 1957 | | |
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| | | 700 |

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

Date January 2, 1957

DMEA Docket No. 4470
DMEA Contract No.
Commodity Uranium
Name of applicant Seneca Mines, Inc.
Name of property Diamond claims, et al
Location of property Boulder County, Colorado
Estimated cost of project $39.500.00

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

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

1. Date of subject document: 12/11/56. 2. Date received by reviewer: 12/18/56

3. Prior reports on this property known to reviewer: Yes ☐ No ☐

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

5. Information available on past production: Yes ☐ No ☐

6. Other pertinent factors known to reviewer: Yes ☐ No ☐

7. Explain items marked yes above:

8. Factors meeting 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 [x] without prejudice
   d. Agree with Field Team [x]
   e. Disagree with Field Team ☐
   f. Suggest alternate plan ☐
   g. Request another examination ☐
   h. Approval ☐
   i. Consult with Mr. _____ at _____ DMEA office.

10. Remarks: (Use back of page if necessary) Mr. J. O. Hosted, Washington representative of the Atomic Energy Commission, assisted in the review.

DEC 26 1956

IN REPLY REFER TO:

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

RECEIVED DEC 26 1956 D.M.E.A.

Memorandum

December 26, 1956

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4470, Seneca Mines, Inc., Diamond claims, Gold Lake area, Boulder County, Colorado, (uranium).

The examining team reports that uranium minerals on the applicant's property are found in, and directly associated with, pegmatites.

Pegmatites have a very disappointing history as far as uranium production is concerned. Literally hundreds of pegmatite bodies in the United States have been examined by Government and private industry geologists but not a single minable deposit has been found. The main reason for failure is because, by their nature, pegmatites are most often relatively small and scattered.

In the effort to obtain more information about the subject property the application was discussed with field personnel of the U.S.G.S. in Denver.

Denial of the application, as recommended by the examiners, seems warranted for the following principal reasons:

1) Uranium minerals on the property are associated with small pegmatite bodies rather than with far and deep reaching shear zones as postulated by the applicant. The examining team found no instance to the contrary.

2) The pegmatite bodies on the property are small. A maximum size would be of the magnitude of 6 feet wide, 6 feet deep and perhaps 100 feet long. Such a body would contain about 300 tons; and even that could not possibly be all ore.

3) The sporadic distribution of the pegmatites would make for an exceedingly difficult and unpredictable exploration target. Other than grid drilling there would be no sure method of spotting drill holes to search for covered pegmatites. In the present state of our knowledge about these particular pegmatites a 'near miss' would go undiscovered.

4) Small, high grade samples, such as those taken by the applicant and the field examiners, are easily obtainable from pegmatites. Since the total tonnage in the whole pegmatite is small such samples merely represent a very small quantity of high grade material.

5) The Seneca Mines, Inc., property has already been explored by many trenches and at least three drill holes. Discovery of ore did not result; and there are no geologic reasons at present that indicate that more exploration work would have success.

I feel reasonably certain that an exploration project would have poor chances of finding significant amounts of uranium ore. For the reasons outlined herein and in the examining team's report, I am in agreement with recommendations for denial of the application.

S. H. Kilsgaard

For: W. P. Williams

12-18-56

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

224 New Customhouse
Denver 2, Colorado

December 11, 1956

RECEIVED DEC 13 1956 DMEA

Memorandum

To: Secretary to the Operating Committee

From: DMEA Field Team, Region III

Subject: Joint Report of Examination Docket DMEA 4470 (Uranium) Seneca Mines, Inc. (Diamond claims, et al) Boulder County, Colorado.

Enclosed are the original and three copies of a joint engineering and geologic Report of Examination on the subject property.

The examiners conclude that significant deposits of uranium ore cannot be expected from this property, if the uranium is genetically related to small pegmatite dikes.

The examiners recognize a remote chance that the uranium is genetically related to fractures in the ortho-gneiss. They conclude that reconsideration of the application would be appropriate if additional work by the Applicant indicates the probability of such genetic relations.

They recommend that the application for DMEA assistance be denied without prejudice. We concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
12-17-56
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
DEC 10 1956
REGION III
DENVER, COLORADO

TRANSMITTED
DEC 11 1956

December 7, 1956

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18

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw
E. N. Harshman

Subject: DMEA Docket 4470 (Uranium), Sencea Mines, Inc. (Diamond claims, et al.), Boulder County, Colorado

Enclosed are the original and nine copies of a joint examination report by F. B. Moore, U. S. Geological Survey, and D. E. Redmon, U. S. Bureau of Mines, in which denial of the subject application without prejudice is recommended.

The applicant proposes to explore for uranium ore deposits on the property by trenching and by diamond drilling, at an estimated total cost of $39,500.

From all available data, the examiners conclude that the uranium deposits are genetically related to the many small pegmatites present in the area and not related to shear zones as persumed by the applicant. The pegmatites on the applicant's property are small and it does not appear probable that significant deposits of uranium ore will be found in them.

The examiners recognize a remote chance that the uranium is genetically related to fractures in the ortho-gneiss. They conclude that reconsideration of the application would be appropriate if work by the applicant indicates the probability of such genetic relations.

We concur with the conclusions and recommendations made in the examination report.

John F. Shaw
Supervising Mining Engineer

E. N. Harshman
Member, Field Team

Enclosures (10)
ENHarshman:mp

ROUTED BY
DMEA OPERATING COMMITTEE
12-17-56

FOR UNITED STATES GOVERNMENT USE ONLY

TRANSMITTED

DEC 11 1956

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 4470

Seneca Mines, Inc.

Diamond claims, et al., (Gold Lake Project)

Boulder County, Colorado

Uranium

Joint Engineering and Geological Report

by

Frank B. Moore, Geologist
Geological Survey

D. E. Redmon, Mining Engineer
Bureau of Mines

December 6, 1956

Reviewed by
DMEA OPERATING COMMITTEE
12-17-56
(Date)

CONTENTS

Page

Introduction and summary..... 1

Acknowledgments..... 2

Property, location, physical features..... 2

Ownership, history, production..... 4

Present status..... 4

Equipment and facilities..... 4

Geology..... 5

Samples and ore reserves..... 8

Applicant's proposal and cost estimate..... 9

Conclusions and recommendations..... 10

ILLUSTRATIONS

Figure — Follows page

1. General area map, Seneca Mines, Inc., Gold Lake Project, Boulder County, Colorado. DMEA 4470..... 2

2. Claim area sketch map, Seneca Mines, Inc., Gold Lake Project, Boulder County, Colorado. DMEA 4470..... 2

3. Generalized geologic map of four prospect trenches showing results of sampling, Seneca Mines, Inc., Boulder County, Colorado. DMEA 4470..... 10

DMEA 4470

SENECA MINES, INC.
DIAMOND CLAIMS, et al., (GOLD LAKE PROJECT)
BOULDER COUNTY, COLORADO

## INTRODUCTION AND SUMMARY

On September 18, 1956, Seneca Mines, Inc., applied for DMEA assistance to explore for uranium on 17 unpatented mining claims in Boulder County, Colorado. The claims were leased from Master Corporation, Denver, Colorado, owner.

The property was examined October 25, 1956, by Frank B. Moore, U. S. Geological Survey, and D. E. Redmon, Bureau of Mines, accompanied by Erich Sarapuu, vice-president and engineer for the applicant. Submission of the report of examination was delayed at the request of Mr. Sarapuu. He hoped to be able to present diamond-drilling data bearing on the origin of the uranium mineralization. The information was presented on November 26, 1956, and showed only that the uranium minerals were associated with pegmatites in or near a shear zone.

The applicant's single-stage program consists of trenching across theoretically favorable shear zones in Precambrian Boulder Creek granite, and core-drilling from the surface, to explore these shear zones at depth. The estimated total cost of the program is $39,500.

There is no conclusive evidence that the uranium mineralization is genetically related to the shear zones. The uranium minerals are apparently present only in pegmatites, not necessarily along shear zones. The uraniferous pegmatites are erratic in size, shape, and distribution.

Because of the discontinuity of mineralized areas, it is problematical that core drilling would satisfactorily delineate significant amounts of uranium-bearing material.

It is concluded that the application for DMEA assistance be denied without prejudice.

## ACKNOWLEDGMENTS

Mr. E. L. Grossman and Mr. J. Schlottmann from the Denver Branch of AEC furnished information concerning the property.

## PROPERTY, LOCATION, PHYSICAL FEATURES

The Gold Lake property is leased by Seneca Mines, Inc., from Master Corporation, 5700 Flora Place, Denver, Colorado, and is composed of 17 unpatented mining claims in sec. 3, T. 1 N., R. 72 W. and secs. 33, 34, 27, T. 2 N., R. 72 W., 6th P.M., Boulder County, Colorado (figs. 1 & 2).

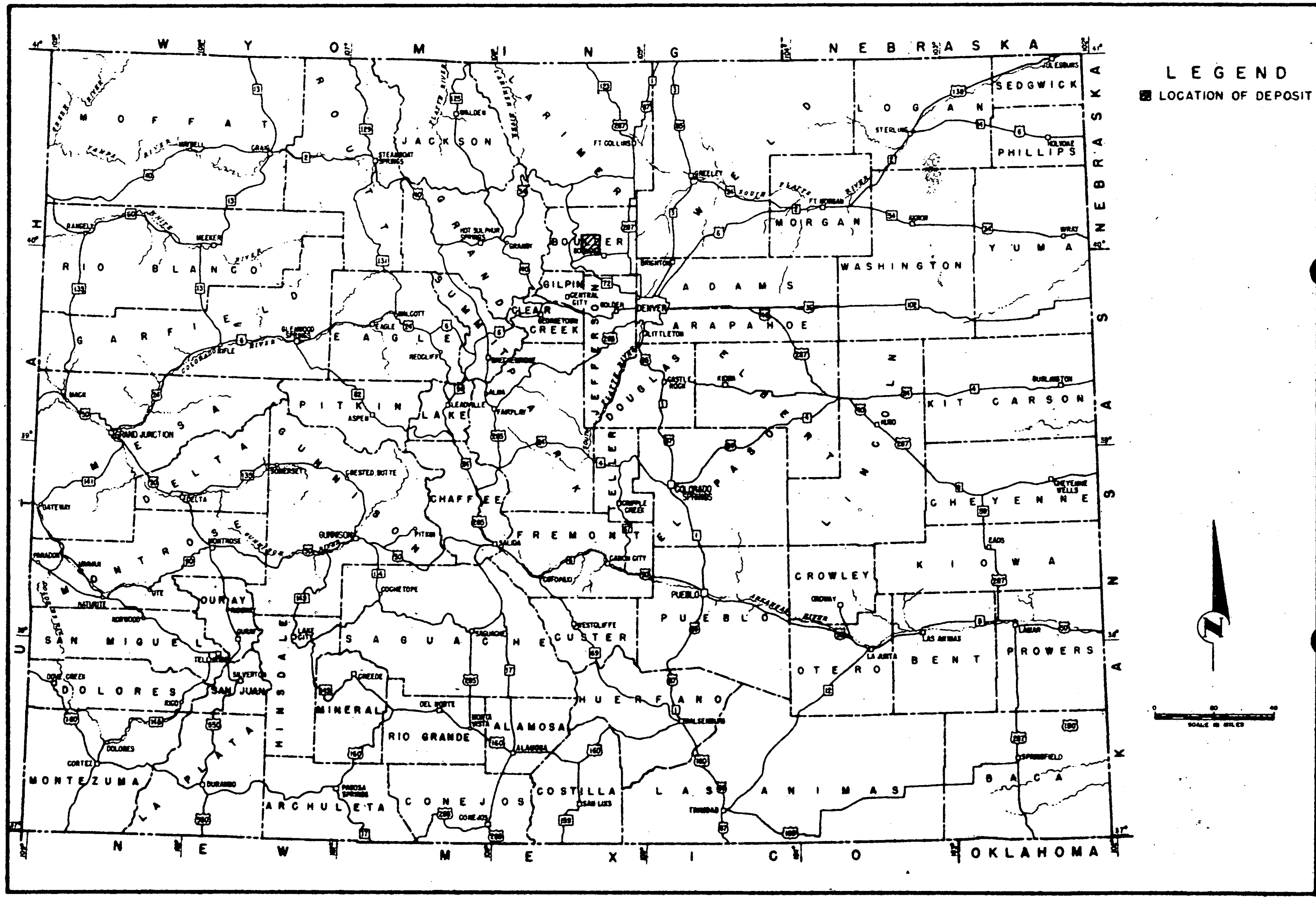


FIGURE 1 - GENERAL AREA MAP, SENECA MINES, INC., GOLD LAKE PROJECT, BOULDER COUNTY, COLO. DMEA 4470

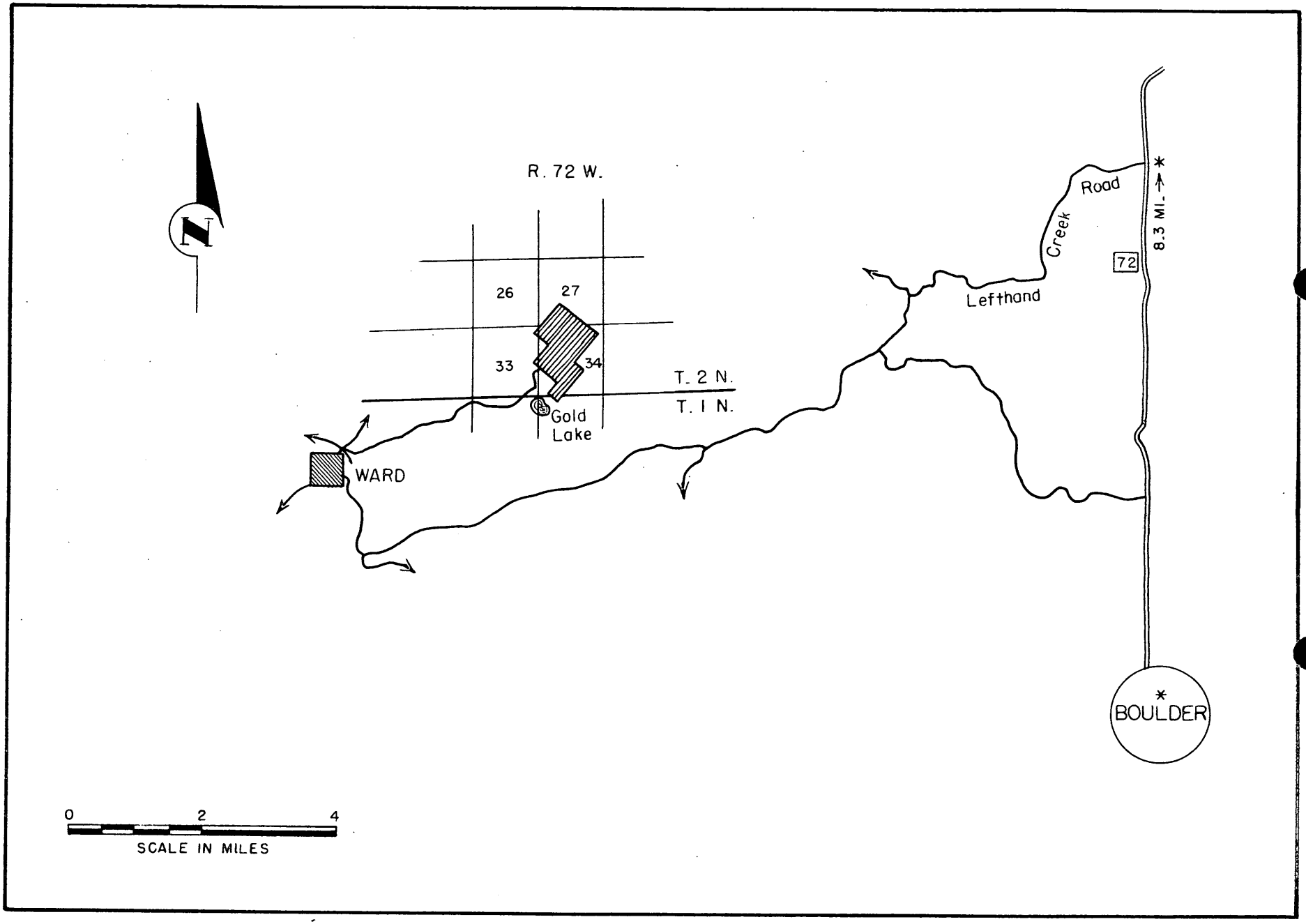


FIGURE 2 - CLAIM AREA SKETCH MAP, SENECA MINES, INC., GOLD LAKE PROJECT, BOULDER COUNTY, COLORADO.
DMEA 4470

The claims are recorded as follows:

| Name of claim | Book | Page |
|---|---|---|
| No. 1 Diamond | 1009 | 142 |
| No. 2 Diamond | 1009 | 144 |
| No. 3 Diamond | 1009 | 143 |
| No. 1 Rocky | 1009 | 146 |
| No. 2 Rocky | 1009 | 428 |
| No. 3 Rocky | 1009 | 430 |
| No. 4 Rocky | 1009 | 432 |
| No. 1 Hatchet | 1012 | 103 |
| No. 2 Hatchet | 1012 | 105 |
| No. 3 Hatchet | 1012 | 107 |
| No. 4 Hatchet | 1012 | 109 |
| No. 5 Hatchet | 1012 | 111 |
| No. 1 Manhattan | 1002 | 95 |
| No. 2 Manhattan | 1002 | 97 |
| No. 3 Manhattan | 1002 | 99 |
| No. 4 Manhattan | 1002 | 101 |
| No. 1 Rona | 1002 | 113 |

The property is about 4 miles east-northeast of Ward, Colorado, and is reached by traveling north from Ward, 0.1 mile, then turning right and proceeding 1.3 miles, then taking the middle road at a triple fork for 3.5 miles, then turning left at the Gold Lake ranch for 0.3 miles. One is then at pits nos. 1 and 2.

The topography of the property is mountainous, but the slopes are relatively gentle with altitudes ranging from 8,500 to 8,700 feet.

The climate is moderate, but heavy snows occur during winter that might occasionally stop mining activities. There is abundant timber for mining uses on the property. Water is available from the Gold Lake overflow that runs across the property.

Electric power could be obtained by extending a power line about 500 yards from Gold Lake camp.

Skilled labor is available in nearby communities, and adequate housing facilities are obtainable in Ward.

Supplies can be obtained in Boulder or Denver, Colorado, respectively 25 miles and 55 miles southeast by road.

## OWNERSHIP, HISTORY, PRODUCTION

The 17 unpatented mining claims are owned by Master Corporation, 5700 Flora Place, Denver, Colorado. On June 15, 1956, the claims were leased for an indefinite period to Seneca Mines, Inc., a Nevada corporation, which began exploring the shear zones for uranium.

No production has yet been realized from the property.

## PRESENT STATUS

Exploration is continuing with available equipment.

## EQUIPMENT AND FACILITIES

Seneca Mines, Inc., have the following equipment on the property that can be used for exploration or mining purposes:

1 - D-7 Caterpillar with blade

1 - Reich Brothers Mfg. Co. core drill
(truck mounted angle drill)

1 - Water truck

1 - Fuel truck, (Willys 4 X 4)

1 - 315 c.f.m. compressor
(Gardner-Denver)

1 - 125 c.f.m. compressor

1 - Wagon drill

2 - Jackhammers

1 - Electric jackhammer

1 - Gamma-ray bore-hole logger (recording)

1 - Carborne scintillometer

## GEOLOGY

The Seneca Mines, Inc., property near Gold Lake has been developed by an unknown number of prospect trenches. The area for which exploration assistance was requested has been explored by four trenches (fig. 3), three of which were examined. The trenches are cut in Boulder Creek granite which forms a body 1 to 2 miles wide and 5 miles long extending northward from the property. The map of the Front Range mineral belt (Lovering and Goddard, 1939) shows a pegmatite nearly 1 mile long by one-fifth mile wide cropping out about one-quarter mile east of the property.

The area explored by the trenches contains many small pegmatite dikes from 1 to 6 feet wide. Uranium occurs in some of these dikes. The highest grade material was seen in pit no. 1 where a biotite-rich phase of the pegmatite gave counts of 3 to 4 Mr/hr on a Geiger counter. No uranium minerals can be identified in material collected by the field team, but samples supplied by the applicant, said to have come from pit no. 1, contained uraninite and gummite. One sample collected by the examining team contained small coatings of yellowish material which may be uranophane. A north-striking shear, 2 to 6 inches wide, cuts the radioactive area in pit no. 1 but apparently has no connection with the uranium mineralization. The radioactive area, as exposed at the time of the examination, was about 10 feet long and 2 to 3 feet wide. The north-striking shear is exposed in the west end of pit no.2, but here also the radioactive material is apparently associated with a pegmatite and not with the shear. The count in pit no. 2 is 1.0 Mr/hr. Pit no. 3 contains several small areas (see sample locations on figure 3) in which radioactive material occurs. The two areas exposed at the time of the examination, one near the south end of the pit and one at the north end, contained radioactive material associated with small pegmatites. The operators state that autunite has been found in this pit. The fault in pit no. 3, as mapped by the company geologist, could not be seen by the examining team.

Three shallow diamond drill holes (maximum depth less than 50 feet) were drilled by the company subsequent to the field examination. The holes were drilled at the pit no. 1 location for the purpose of testing the shear zone at greater depth in the hope that primary uranium minerals would be found in the shear. The shear was apparently cut as indicated by the presence of soft gougy material and by loss of core. All radioactive sections of the core were in pegmatitic material.

Although most of the samples shown by the company and two samples collected by the examining team were ore grade, the uranium appears to be in small pockets in pegmatite especially in the biotitic areas. All radioactive areas were in or adjacent to pegmatites; radioactive material occurs in pegmatite in places where no fractures or shears can be seen; at no place was radioactivity encountered in shears away from pegmatites. Mr. Schlottmann of the AEC states that uranophane occurs in the shear cutting orthogneiss in pit no. 1. However, the small quantities of secondary minerals in this shear do not necessarily indicate a hydrothermal origin, since they may have been derived from primary uranium minerals in the pegmatite.

## SAMPLES AND ORE RESERVES

The results of analysis of ten samples taken by the company and of two taken by the examining team are given in the table below. The locations from which these samples were taken are shown on figure 3. In several places the company took more than one sample from a single location but at different elevations. No figures are available on the length of the company channel samples.

Results of analysis

| Sample | No. | Type | Location | Percent $U_3O_8$ |
|---|---|---|---|---|
| Company | 1 | Channel | Pit 1 | 0.45 |
| " | 2 | Grab | " | 0.73 |
| " | 3 | Channel | " | 0.38 |
| " | 4 | Grab | Pit 2 | 0.39 |
| " | 5 | " | " | 0.57 |
| " | 6 | " | Pit 3 | 0.15 |
| " | 7 | " | " | 0.61 |
| " | 8 | " | " | 0.175 |
| " | 9 | " | " | 0.175 |
| " | 10 | " | " | 0.35 |
| DMEA | A | 18 in. channel | Pit 1 | 0.703 |
| " | B | 16 in. channel | Pit 2 | 0.279 |

Because of limited exposures and insufficient sample data, ore reserves cannot be calculated. The examining team believes, however, that the reserves are small.

## APPLICANT'S PROPOSAL AND COST ESTIMATE

The applicant proposes to explore for uranium-bearing veins by removing overburden and trenching with a bulldozer and ripper to remove 2,000 cubic yards of rock and soil.

Further exploration would consist of 5,000 feet of BX-size core drilling to test structures that might be mineralized or any other favorable structures discovered by trenching.

Derivation of unit cost, BX-core drilling: hole depth - 200 feet

| Item | Cost per foot |
|---|---|
| Labor | $2.80 |
| Bit cost | 1.40 |
| Fuel, oil | 0.20 |
| Water, haulage and site preparation | 1.50 |
| Repairs and maintenance | 0.60 |
| Overhead, interest, depreciation | 0.50 |
| Total | $7.00 |

Applicant's summary of costs:

| | | |
|---|---|---|
| Trenching 2,000 cu. yd. of rock at $2.25 per cu. yd. | $ 4,500.00 | |
| Diamond drilling, BX core 5,000 feet at $7.00 per foot | 35,000.00 | |
| Total | | $39,500.00 |

## CONCLUSIONS AND RECOMMENDATIONS

The examining team believes that the uranium at the Seneca Mines, Inc., Gold Lake property is genetically related to small pegmatite dikes in which significant quantities of uranium cannot be expected to occur.

Should later evidence show that the uranium has a hydrothermal origin or should uranium be found in large masses of pegmatite, the property might warrant further consideration.

It is recommended that the application for DMEA assistance be denied without prejudice.

RECEIVED
OCT 1956

October 3, 1956

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4470 (Uranium) Seneca Mines, Inc. (Diamond Claims, et al) Boulder County, Colorado

The application for Seneca Mines, Inc., Docket DMEA 4470 in the amount of $39,500.00 was received in this office on October 3, 1956.

A field examination will be made and suitable report prepared by an engineer from the Denver office.

W. H. KING

W. H. King

cc: W. M. Traver (2)
E. N. Harshman
J. F. Shaw
Sec. Op. Com (2)

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

RECEIVED
OCT - 1956

224 New Customhouse
Denver 2, Colorado

October 2, 1956

Memorandum

To: W. H. King (2) (w/brochure)
and E.N. Harshman

From: DMEA Field Team, Region III

Subject: Docket DMEA 4470 (Uranium) Seneca Mines, Inc. (Diamond Claims, et al) Boulder County, Colorado

Enclosed is the subject application in the amount of $39,500.00. The field examination and suitable report are requested.

Enclosed for your further information is a copy of a letter from the Chairman of the Operating Committee, dated September 26, 1956, and memoranda of review of the application by John E. Crawford and W. P. Williams.

Will you please return the brochure with the report of examination.

DMEA Field Team, Region III

W. M. TRAVER

By W. M. Traver
Executive Officer

Enclosures

WMC:ytl

cc: Sec. Op. Comm. (2)
Docket 4470
Chron.

10/5/56 gla

**SENECA MINES, INC.**
4722 BROADWAY
KANSAS CITY 12, MISSOURI

RECEIVED
OCT - 4 1956

October 1, 1956
1020 Pleasant Street
Boulder, Colorado

Mr. Allen S. Dakan, Chief
Operations Control and
Statistics Division
Department of the Interior
Defense Minerals Exploration
Administration
Washington 25, D.C.

Subject: DMEA -4470
Re: Exploration Assistance Seneca Gold Lake Property.

Dear Mr. Dakan:

Herewith I am sending to you four copies of petrographic analysis of ore samples taken from pit No 2. These analysis were made by Dr.M.P. Nackovski, at University of Utah, Salt Lake City.

With kindest regards.

Sincerely yours,

Erich Sarapuu

Erich Sarapuu

Rock Specimen # 1.

Name: Biotite Granite
Texture: granitoid, coarse-grained.
% Mineral Composition:

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OCT - 4 1956

Primary Minerals.
Essential

30 - Microcline
20 - Albite
10 - Oligoclase
10 - Quartz

Characterizing
5 - Biotite

Minor Minerals

20 - Apatite

Secondary Minerals

1 - Uranophans ?
1 - Muscovite

Rock Specimen # 2

Name: Hornblende Biotite Granodiorite

Texture: Granitoid, medium grained.

% Mineral Composition:

Primary Minerals
Essential

15 - Microcline
45 - Plagioclase
10 - Quartz

Characterizing

10 - Hornblende
5-10 -Biotite

Minor Minerals

10 - Apatite
1 - Zircon
1 - Magnetite ?

Seneca Mines, Inc.
4722 Broadway
Kansas City, Mo

Seneca Mines Inc.
1020 Pleasant Street
Boulder, Colorado

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

DOCKET COPY
Surname:
FLKnouse
Lamb
Rülsgoard
Selbridge
FLJohnson

SEP 28 1956

Mr. Roy O. Park
Seneca Mines, Inc.
4722 Broadway
Kansas City 12, Missouri

Re: Docket No. DMEA-4470 (Uranium)
Diamond Claims, et al.
Boulder County, Colorado

Dear Mr. Park:

The application for assistance in exploring your claims, under the captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred for a field examination to:

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver, 2, Colorado

The Regional Office will contact you at the earliest opportunity in regard to your project.

Sincerely yours,

C. O. Mittendorf

Administrator

FLKnouse:ms 9/25/56
Copy to: Docket
Field Team, Region III
Code 700
Mr. Knouse
Admr. R. File

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

DOCKET COPY
Surname:
F L Knouse
Selfridge
Fjelmoe

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

SEP 26 1956

Re: Docket No. DMEA-4470 (Uranium)
Seneca Mines, Inc.
Diamond Claims, et al.
Boulder County, Colorado

Dear Mr. Traver:

The captioned application is referred to your office for a field examination and report on the proposed project.

Enclosed are copies of memoranda, dated September 19 and 20, 1956, from Mr. W. P. Williams, USGS, and Mr. John E. Crawford, USBM, respectively, relating to the subject project. Also enclosed is an extra copy of the application with attachments for the use of the Field Team.

If the Field Team recommends an exploration program, we will require, in addition to the usual information, the following:

1. Drilling bids from three contractors for the drilling recommended; and
2. Consent to Lien and Subordination Agreement executed by the Master Corporation covering the claims listed in the application.

Any work recommended by the Field Team should not be closer than 100 feet to the outside boundary of the property.

Approved:

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

Thor H. Kiilsgaard (SLB)
Member, Geological Survey

Sincerely yours,

George C. Selfridge (SLB)
Chairman, Operating Committee

Enclosures: 6

FLKnouse:ms 9/25/56
Copy to: Docket
Operating Committee
Mr. J. E. Crawford, 3643
Mr. Kiilsgaard, 5222
Mr. J. O. Hosted, 3210, GSA
Code 700
Mr. Knouse
Admr. R. File

9/21/56 gla

[illegible]
[illegible]
[illegible]

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SEP 21 1956

Date 9/20/56

DMEA Docket No. 4470
DMEA Contract No.
Commodity Uranium
Name of Applicant Seneca Mines Inc.
Name of property "Gold Lake"
Location of property Boulder County, Colorado
Estimated cost of project $39,500

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

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

1. Date of subject document: 9/12/56. 2. Date received by reviewer: 9/18/56.

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

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

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

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

7. Explain items marked yes above:

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 [X] ✓
- c. Partial [ ]
- d. Agree with Field Team [ ]
- e. Disagree with Field Team [ ]
- f. Suggest alternate plan [ ]
- g. Request another examination [ ]
- h. Approval [ ]
- i. Consult with Mr. E. E. Thurlow at Denver DMEA office.

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

Mr. Joseph O. Hosted, Washington representative of the Atomic Energy Commission, assisted in the review.

9/21/56 gla

IN REPLY REFER TO:

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

September 19, 1956

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of application, DMEA 4470, Seneca Mines, Inc., Gold Lake project, Boulder County, Colorado, (uranium).

The applicant proposes to explore for uranium ore deposits on 17 unpatented mining claims located in the Colorado Front Range. Although a complete exploration project, including geophysical and geochemical surveys, geologic mapping, drilling, trenching, and underground work, is envisioned for the property the applicant wishes DMEA assistance only for 2,000 cubic yards of trenching and 5,000 feet of core drilling. Total estimated cost of the DMEA work would be $39,500.

The applicant hopes to discover vein type deposits in Precambrian schists and granites; and he asserts that uranium and sulfide mineralization has been uncovered in three existing test pits on the property. That type deposit has so far not produced outstandingly large tonnages of ore in the U. S.

Field examination of the property and its mineralization would probably afford information as to whether additional trenching and subsequent drilling are advisable. I, accordingly, recommend that the application be referred to the Field Team for examination and report.

W. P. Williams

W. P. Williams

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
Washington 25, D. C.

September 18, 1956

Seneca Mines, Inc.
4722 Broadway
Kansas City, Missouri

Subject: DMEA-4470
Re: Exploration Assistance
Seneca Gold Lake Property

Gentlemen

Your application for exploration assistance, dated September 12, 1956 submitted to our office at Denver, has been assigned Docket Number DMEA-4470 and referred to the Rare and Miscellaneous Metals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Chief
Operations Control and
Statistics Division

Copy to:

Region III. Denver, Colorado
Code 700

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

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SEP 17 1956

224 New Customhouse
Denver 2, Colorado

September 13, 1956

Memorandum

To: Secretary to the Operating Committee

From: DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium), Seneca Mines, Inc., (Seneca Gold Lake Property), Boulder County, Colorado

Enclosed are three copies of the subject application in the amount of $39,500.00 and three copies of a lease agreement.

The application is well prepared but lacks three bids for diamond drilling. One copy of the application is being retained in our file.

DMEA Field Team, Region III

By W. M. Traver
Executive Officer

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

DMEA
DEPARTMENT OF THE INTERIOR
SEP 12 1956
REGION III
DENVER, COLORADO

RECEIVED
SEP 17 1956

# APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

*Not to be filled in by applicant*

Docket No. 4470
Metal or Mineral Uranium
Date Received 9-17-56
Estimated Cost $39,500
Participation (Government %)

## INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: SENECA MINES INC.
4722 Broadway
Kansas City, Missouri
Incorporated in State of Nevada

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

Application enclosed

(*b*) State any mine name by which the property is known.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Application enclosed

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within 14 days and be completed within 12 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

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*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)?

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

## 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.

Dated September 12, 1956

SENECA MINES INC.
(Applicant)

By [signature]

Vice President

**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.**

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

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SEP 17 1956

1. Name of applicant

a. Seneca Mines, Incorporated
4722 Broadway
Kansas City 12, Missouri

b. Incorporated in Nevada

c. Corporation officers:

| | |
|---|---|
| President . . . . . | L. Russell Kelce<br>Route 1, Grandview, Mo. |
| Vice President. . . . . | Roy O. Park<br>6401 Aberdeen, Kansas City, Mo. |
| Vice President. . . . . | Erich Sarapuu<br>7943 Campbell, Kansas City, Mo. |
| Vice President. . . . . | S. Harold Reno<br>6140 Ward Parkway, Kansas City, Mo. |
| Vice President. . . . . | O. G. Bitler<br>5049 Wornall Road, Kansas City, Mo. |
| Secretary . . . . . | James W. Taylor<br>601 E. 65th Terrace, Kansas City, Mo. |
| Vice President-Treasurer. . . . | Clare A. Stewart<br>6316 W. 65th Terrace, Kansas City, Mo. |
| Ass't Secy-Ass't Treas. . . . . | E. H. Bickley<br>9718 High Drive, Kansas City, Mo. |
| Director . . . . . | L. Russell Kelce |
| Director . . . . . | Roy O. Park |
| Director . . . . . | S. Harold Reno |
| Director . . . . . | O. G. Bitler |
| Director . . . . . | M. W. Cline<br>6430 Belinder Road, Kansas City, Mo. |

d. Not applicable

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SEP 17 1956

D.M.E.A. APPLICATION

"GOLD LAKE PROJECT: BOULDER COUNTY, COLORADO

SENECA MINES, INC.

4722 BROADWAY

KANSAS CITY, MISSOURI

3. Applicant's property rights:

Leased from Master Corporation, Inc., 5700 Flora Place, Denver, Colorado.

a. Legal description of land:

17 claims staked on Government land, Township 1N, 2N, Range 72W, Boulder County, Colorado (Enclosure - Maps 1 and 2)

b. Mine name:

Seneca Gold Lake Uranium Property

c. Interest in land: lessee

d. Copy of lease attached hereto

e. Not applicable: do not own land

f. Book and page numbers for each recorded location notice:

| Name of Claim | Book | Page |
|---|---|---|
| No. 1 Diamond | 1009 | 142 |
| No. 2 Diamond | 1009 | 144 |
| No. 3 Diamond | 1009 | 143 |
| No. 1 Rocky | 1009 | 146 |
| No. 2 Rocky | 1009 | 428 |
| No. 3 Rocky | 1009 | 430 |
| No. 4 Rocky | 1009 | 432 |
| No. 1 Hatchet | 1012 | 103 |
| No. 2 Hatchet | 1012 | 105 |
| No. 3 Hatchet | 1012 | 107 |
| No. 4 Hatchet | 1012 | 109 |
| No. 5 Hatchet | 1012 | 111 |
| No. 1 Manhattan | 1002 | 95 |
| No. 2 Manhattan | 1002 | 97 |
| No. 3 Manhattan | 1002 | 99 |
| No. 4 Manhattan | 1002 | 101 |
| No. 1 Rona | 1002 | 113 |

4. a. DESCRIPTION OF OPERATIONS CARRIED OUT

At the time of acquisition of the "Gold Lake" property by Seneca Mines Inc. (Enclosure No. 2 - Claim location map) the area had been prospected only by means of portable scintillation equipment. The only physical improvements in evidence were several roads and small pits where the overburden had been stripped from anomalous areas. Uranium minerals of ore grade were found at locations where Pits No. 1, 2 and 3 exist at present time (Enclosure No. 3 - Map indicating uranium mineralization).

Upon acquisition of this property by Seneca Mines more extensive exploration and development has been carried out.

Roads were first built by means of bulldozing in order that ready accessibility could be obtained to those areas which held the greatest promise for the future development of commercial uranium ore, as determined by the geologic structures and by radiometric surveys. As the roads were developed, it was possible to utilize carborn scintillation equipment and by maping the area to draw anomaly map which indicate the continuance of ore bearing structures across the property (Enclosure No. 4 - Anomaly map).

The following equipment was moved on the property for physical work:

1. D 7 bulldozer
2. Reich Brother's Mfg. Co. core drill (angle drill)
3. Water truck
4. Fuel truck
5. 315 cfm compressor with jack-hammer and wagon-drill and 125 cfm compressor with jack-hammer
6. Electric jack-hammer for drilling test holes
7. Gamma-ray bore-hole logger (recording)
8. Carborn scintillation equipment for radiometric surveys.

In Boulder, 1020 Pleasant Street, field office and laboratory was set up. The laboratory equipment consists of X-ray spectrograph, radiometric scaler and equipment for wet-chemistry.

Three main areas were selected for primary operations: Pits 1, 2 and 3 (Enclosure 3). At these locations after blasting some of the cap-rock uranium bearing veins have been found. Shallow drilling with rotary drill in the area of Pit No. 1 indicated strong desirability for further development work at this location. In order to establish the mineralized structures and study the type of mineralization it was decided to cross-cut the veins and follow it down by trenching to a depth of 15-20 feet. This operation has been carried out in Pits 1, 2 and 3, and partially in Pit 4. Uranium bearing veins have been found and the geological structures have been established (shear zones) and mapped (Enclosure Nos. 5, 6, 7, 8, 9, 10). The work done will be helpful for planning the drilling and underground exploration program.

The results of cross-cutting of veins and radiometric anomaly studies on the property would justify the extension of similar work on the rest of the property.

When possible, ore from the test pits was stockpiled and analyzed by X-ray fluorescent spectrography (Enclosure No. 11 - X-ray spectrograph chart). Uranium ore has been found to be in equilibrium. In general the highest grade samples so far obtained were from Pit No. 1 which analyzed up to 11% $U_3O_8$(grab sample). The assays of samples taken on the property are represented on Enclosure 3 - Map.

The following is a brief description of sampling procedures (Enclosure 3 - Map) and assays:

| Location on Map 3 | Sample description |
|---|---|
| 1. | Pit No. 1, channel-sample taken at 8 foot level.<br>Width of vein about 2.5'<br>Chemical Assay 0.45% $U_3O_8$ |
| 2. | Pit No. 1. Grab sample at 4' level.<br>Chemical Assay 0.73% $U_3O_8$ |
| 3. | Pit No. 1. Channel sample south end of hole on bottom part.<br>Chemical Assay 0.38% $U_3O_8$ |
| 4. | Pit No. 2. Grab sample from vein<br>Depth about 3'<br>Chemical Assay 0.39% $U_3O_8$ |
| 5. | Pit No. 2. Grab sample at 8' depth<br>Chemical Assay 0.57% $U_3O_8$ |
| 6. | Pit No. 3. Grab sample at bulldozer cut<br>Chemical Assay 0.15% $U_3O_8$ |
| 7. | Pit No. 3. Grab sample from material bulldozed from vein<br>Chemical Assay 0.61% $U_3O_8$ |
| 8. | Pit No. 3. Grab sample at surface anomaly<br>Chemical Assay 0.175% $U_3O_8$ |
| 9. | Pit No. 3. Grab sample<br>Chemical Assay 0.175% $U_3O_8$ |
| 10. | Pit No. 3. Grab sample from surface.<br>Chemical Assay 0.35% $U_3O_8$ |

4. b. PRODUCTION AND RESERVES

Since the Gold Lake project is still in its early stage of development, the production of ore has not been a matter of concern to Seneca Mines. All the work carried out so far has been performed with the sole purpose of developing the property to the point where an intelligent drilling and underground exploration eventually could be performed. The magnitude of uranium mineralization and the grade found, could refer for a sizeable ore reserve in this area.

4. d. ACCESSIBILITY

The Gold Lake property is easily accessible by road, being located adjacent to Gold Lake Ranch. The property is approximately thirty miles by road from Boulder, Colorado and twenty miles from U. S. Highway 7. The trip by car from Boulder takes about one hour, and the mine may be reached from Denver in 1½ hours. The nearest mill to which the ore may be shipped is located at Rifle, Colorado, 160 miles distant. The samples have been sent to Rifle mill and it is understood that the mill can handle the ore. The town of Ward, Colorado is 3 miles from the mine, and Jamestown is about 4½ miles. Living quarters are readily available on short notice.

4. e. MANPOWER, ETC.

Manpower is available throughout this area, chiefly from Boulder and Jamestown. Most necessary materials, supplies, and equipment are available in Boulder; those not available in Boulder may be obtained from Denver. There is a power line running into Gold Lake camp, only a few hundred yards from the mine area, which can be extended to serve the mine. Water is available from Gold Lake, and an overflow stream from Lake runs into the property.

# Geological Report

Introduction:

The Seneca Mines uranium property is located in Township 1N and 2N, Range 72W, about 3 miles east-northeast of the city of Ward at Gold Lake, Boulder County, Colorado. This property consists of 17 claims (Enclosure No. 2 - Claim location map).

The purpose of the exploration is to establish the reserves of uranium ore which has been found on the property in veins, to find additional veins and finally to mine the ore-bodies.

The exploration program planned for the property consist of the following methods:

1. Geophysical measurements
   - a. Radiometric survey
   - b. Geochemical checking of trace elements by fluorescent X-ray spectrography
   - c. Magnetic measurements of vertical intensity
   - d. Electrical measurements
     - I Resisitivity measurements
     - II Electromagnetic measurements
2. Geological mapping
3. Road building
4. Bulldozing overburden from anomalous areas
5. Subsurface geological mapping
6. Drilling of mineralized structures
7. Trenching the anomalous areas by blasting and bulldozing
8. Tunneling and cross-cutting the ore bearing veins at 200 foot level

Methods 1c, 1d, and 8 have not yet been employed but will be put into use under the proposed exploration program.

Stratigraphy

The Gold Lake property lies within the pre-Cambrian complex of the Front Range. The rocks surrounding the property consist mainly of three types of rock. The Idaho Springs quartz biotite schist is the oldest of the three and is found largely to the east and southeast of the property. The Boulder Creek Granite intrudes the property and extends northward for nearly five miles as a large intrusive stock from 1 to 1½ miles in width. The Silver Plume Granite is the youngest of the three, and borders the property to the west and southwest. These pre-Cambrian rocks are cut by Laramide intrusives which form irregular stocks and dikes.

Structural Features

The Gold Lake property has four major faults cutting the pre-Cambrian rock. They are numbered A, B, C, and D and may be located on Enclosure No. 4 - Anomaly Map. Associated with these faults are number of shear zones along the incompetent members of the Boulder Creek Granite. These shears have a generally northward trend and follow somewhat closely the foliation of the surrounding granite. These zones are also zones of weakness through which mineralization has occured. The intersections of dikes with shear zones have also proved to be areas of high mineralization as well the location of changing of trike of the shear. The major faults A, B, C, D, have been considered as deep channelways for the ascending mineral solutions.

Mineralization

Uranium minerals of pitchblende and its alteration products Gummite have been found close to the surface in test pits. In Pit No. 3 considerable Autunite mineralization is exposed at present time. Sulfides like Pyrite, Chalcopyrite have been found in Pit No. 1. The Flourspar and Malchite has been found in Pit No. 1.

Summary and conclusions

The geological features of the area worked are presented on Enclosure Nos. 4, 5, 6, 7, 8, 9, 10. It is expected that the drilling and underground exploration drifting will prove mineable quantities of uranium ore on the Gold Lake property.

The zone of mineralization on Gold Lake actually extends further north about 2 miles into Rock Lakes area. Similar mineralization has been found around Rock Lake. The claims belong to Mr. A. C. Bluemel and are not yet under our lease.

5. The exploration project

a. Minerals to explore: U r a n i u m

b. Description of proposed work

The proposed exploration program is planned to consist of two phases of operation:

1. Surface exploration including drilling
2. Underground exploration by tunneling and drifting

It is recommended that the underground operation of exploration will be considered after the surface exploration has furnished justified data for underground exploration.

The application of D. M. E. A. loan is considered only for trenching

and drilling program in accordance with the cost estimation data.

Geophysical measurements:

Among geophysical methods it is recommended to use carborn scintillation equipment for determination mineralized geological structures.

Geochemical checking of soil samples and minor elements by X-ray fluorescent spectrograph from known veins and soil above might give correlations with unknown structures and ore bodies.

Since the mineralized solutions change the magnetic and electrical properties of rock it is believed useful to perform magnetic survey combined with electrical resisitivity and electromagnetic measurements. These measurements should be started first over known occurances of ore and then extended to unknown areas of mineralization.

Geological mapping.

Geological mapping similar to the work done in Pits 1, 2, and 3 should be carried out on the rest of the property.

Road building.

Additional road building is required for radiometric surveying and also for moving supplies and equipment.

Removing overburden and trenching (cross-cutting veins).

It has been found that the uranium bearing veins were located under shallow cover about 5-10' under the cap-rock. By cross-cutting it has been possible to expose the mineralized structures and plan the drilling in Pit 1, 2 and 3 area (Enclosure No. 3). Therefore similar work has been proposed for the rest of the claims. Only major anomalies would be studied.

It is estimated to remove about 4,000 cubic yard of rock in 6 to 8 pits cutting the structures on northern part of property. The size of pits will depend on findings in each particular pit.

Drilling

Core drilling is proposed across the known structures in Pits 1, 2 and 3. The location of first six drill-holes is indicated on Enclosure 3. The drill-holes should intersect the structure at 200' depth and would be drilled at 60° dip with BX size diamond bit. It is expected to drill total footage of about 5000'. The additional drill-holes should be located after proving the extension of mineralized structures across the property.

Underground exploration.

It has been found from the previous exploration that the uranium mineralization changes under variable conditions in geological structures. Therefore underground exploration might substantiate the surface exploration findings. However, the details of underground operation cannot be worked out in detail before part of the drilling is completed. Tentatively it is planned to tunnel and cross-cut the veins at 200 foot level at Pits 1 and 3.

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

The President of Seneca Mines, Inc., Mr. L. Russell Kelce, has been in mining business over 25 years. Mr. Kelce is directing, as President, also Peabody Coal Company, which is the nation's second largest coal producer.

Mr. Harold Reno is in charge of operation, has wide mining experience and is also President of Reno Construction Company, in Kansas City, Kansas.

The Company's field representative, Erich Sarapuu, is mining engineer, graduate of Mining Academy Freiberg (Diploma Engineer) and Missouri School of Mines (Ph.D. in Mining Engineering). He has worked in various mining fields in this country and Europe.

## 6. Cost estimation

This contract will be applied for operation on unit cost bases. The Seneca Mines will have equipment on the property for carrying out the work on contract. The following phases of exploration are subject for D.M.E.A. loan application:

| | |
|---|---|
| 1. Trenching 2,000 cu yard of rock - $2.25 per cu. yard | $ 4,500.00 |
| 2. Diamond-core drilling BX size core Total 5,000' - $7.00 per foot | 35,000.00 |
| | $ 39,500.00 |

## The derivation of unit price

Trenching, drilling, blasting, rock moving.

Drilling cost per lineal foot.

Combined drilling and blasting cost per cubic yard.

Type of machine used: Jack-hammer or Wagon drill

Kind of project: Exploration trenching

Nature of rock: Granite

Depth of holes: 6' - 9'

Feet drilled per day: 180'

| | Cost per foot |
|---|---|
| Labor | $ 0.22 |
| Oil, Fuel | 0.05 |
| Repair | 0.01 |
| Drill steel expense | 0.10 |
| Overhead, interest, depreciation, taxes, field office expense | 0.10 |
| Cost of drilling per lineal foot | 0.48 |
| Explosives, fuses | 1.22 |
| Bulldozing | 0.55 |
| Combined cost of drilling, blasting and bulldozing per cubic yard | $ 2.25 |

The derivation of unit price for BX-Core drilling

Type of machine used: Reich Brother's Mfg. Co.
Angle drill, truck mounted

Kind of project: Core drilling
BX-Core

Depth: 200'

Nature of rock: Granite

| | Cost per foot |
|---|---|
| Labor | $ 2.80 |
| Bit cost | 1.40 |
| Fuel, Oil | 0.20 |
| Water haulage and site preparation | 1.50 |
| Repair and maintenance | 0.60 |
| Overhead, interest, depreciation | 0.50 |
| | $ 7.00 |

## Enclosures

1. Boulder County Map
2. Claim Map of Gold Lake property
3. Map of working areas:
   Pits 1, 2, 3
4. Anomaly map of the property
5. Pit No. 1 Geological map-plan view
6. Pit No. 1 Geological map-cross section
7. Pit No. 3 Geological map-plan view
8, Pit No. 2 Geological map-cross section
9. Pit No. 3 Geological map-plan view
10. Pit No. 4 Geological map-plan view
11. X-ray chart of assayed ore sample
~~12. Aerial photos~~

DMEA
DEPARTMENT OF THE INTERIOR
SEP 12 1956
REGION III
DENVER, COLORADO

# OPTION AND LEASE AGREEMENT

THIS AGREEMENT, made and entered into this fifteenth day of June, 1956, by and between the MASTER CORP., a Colorado corporation, of 5700 Flora Place, Denver, Colorado, hereinafter termed "Lessor", and SENECA MINES, INC., a Nevada corporation, hereinafter termed "Lessee",

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SEP 17 1956

WITNESSETH THAT:

WHEREAS, Lessor is the owner of certain unpatented mining claims situate in Boulder County, Colorado, and more particularly described as follows:

| Name of Claim: | Location Certificates Recorded in Book: | Page: |
|---|---|---|
| No. 1 Diamond | 1009 | 142 |
| No. 2 Diamond | 1009 | 144 |
| No. 3 Diamond | 1009 | 143 |
| No. 1 Rocky | 1009 | 146 |
| No. 2 Rocky | 1009 | 428 |
| No. 3 Rocky | 1009 | 430 |
| No. 4 Rocky | 1009 | 432 |
| No. 1 Hatchet | 1012 | 103 |
| No. 2 Hatchet | 1012 | 105 |
| No. 3 Hatchet | 1012 | 107 |
| No. 4 Hatchet | 1012 | 109 |
| No. 5 Hatchet | 1012 | 111 |
| No. 1 Manhattan | 1002 | 95 |
| No. 2 Manhattan | 1002 | 97 |
| No. 3 Manhattan | 1002 | 99 |
| No. 4 Manhattan | 1002 | 101 |
| No. 1 Rona | 1002 | 113 |

All of the records of County Clerk and Recorder of Boulder County, all located in 1956; and

WHEREAS, Lessee desires to lease said mining claims from Lessor, and Lessor is desirous of giving said lease.

NOW THEREFORE, THIS AGREEMENT:

For and in consideration of the sum of $2500.00, and for the consideration of the royalties herein reserved to be paid by Lessee, and for the further consideration of the terms, covenants and conditions hereinafter set forth, the Lessor has

leased, let and demised and by these presents does hereby lease, let and demise unto the Lessee the aforesaid unpatented mining claims.

In consideration of the leasing and letting of said property above described, the Lessee hereby covenants and agrees as follows:

1. That it will enter in and upon said premises and property and commence to prospect and explore said premises and property for the purpose of ascertaining whether there is any uranium or other ores or minerals of commercial value located in, on or under said premises and property. In the event that Lessee shall find ore in its judgment that is commercially profitable, it shall pay to Lessor before December 15, 1956 the sum of $2500.00 as a cash bonus. If said bonus is not so paid, this lease shall thereupon become absolutely null and void, and the Lessee shall surrender said claims to Lessor, and Lessee upon such surrender shall be relieved of any further liability or responsibility thereunder. When said $2500.00 is paid, this lease shall continue until July 15, 1957 and then as long thereafter as minerals and ore of commercial value are mined, extracted, marketed and sold from said property as hereinafter provided, or as long as payment is made in accordance with paragraph 2 hereof.

2. On the fifteenth day of each month following the payment of said $2500.00 bonus Lessee shall pay Lessor, as an advance and minimum royalty, the sum of $500.00, provided, however, that Lessee shall not be compelled to make said payment when, at the time such payment is due, Lessee is prevented from working, developing or operating said property by extremely adverse weather conditions, act of God, strikes or inevitable accident or like conditions beyond its control.

It is further provided, however, that Lessee may not take advantage of the proviso immediately preceding this sentence on account of any cause or combination of causes or conditions existing for a cumulative period exceeding ninety days in any one year; should the condition causing suspension of operations, as aforesaid, be removed after the date an advance payment is due and prior to the due date of the next payment, at the time of the due date of the next payment there shall be also paid to Lessor a proportionate share of the advance and minimum royalty not paid on the previous due date, which proportion shall be measured by the number of days during which the said condition does not exist as related to the entire monthly period.

3. That it will pay to the Lessor a royalty equivalent to ten per cent (10%) of the gross receipts of any and all ore and minerals mined, extracted, marketed and sold from the property above described, and in addition to said royalties the Lessor shall be paid ten per cent (10%) of all bonuses allowed on minerals mined and extracted from said property and premises, which bonuses may be paid by the United States Government, or any agency thereof; "bonuses" as hereinabove used shall not include development and transportation allowances or loans. All advance and minimum royalty paid Lessor pursuant to paragraph 2 hereof shall be deducted from royalties due Lessor under this paragraph.

4. In addition to the cash bonus and reserved royalty heretofore set forth, the Lessee shall pay to Lessor an additional ten per cent (10%) of the gross receipts of any and all ore and minerals mined, extracted, marketed and sold from the property above described until the sum of $5000.00 has been received as an additional bonus.

5. Settlement of royalties and bonus royalties under paragraphs 3 and 4 hereof shall be made on the 15th day of each month for all ores and minerals extracted during the previous month.

6. The Lessee agrees that the Lessor, his agents, representatives and attorneys shall have the right and privilege, at any and all reasonable times, to visit and inspect said premises and property and to take samples of any ore therein and extracted therefrom.

7. The Lessee agrees to make available to the Lessor, at any and all reasonable times, any and all maps, assay returns, geological reports and production reports in connection with the exploration and development of said property.

8. The Lessee shall, during the life of said lease, perform all the necessary assessment work on all of the unpatented mining claims above described and it will within the time and in the manner provided by law record the annual affidavits of labor covering said claims, provided, however, that the Lessee may reassign the entire lease or any part of it to the Lessor before the termination date of said lease, provided the assessment work is not in default and the reassignment is made not less than ninety days before the termination of any assessment work year. Upon the said reassignment of said claims, the Lessee shall be relieved of any further liability or obligation in reference to the claims so reassigned.

9. The Lessee agrees that it will hold the Lessor absolutely harmless from any and all claims for damages or injuries to any person or persons or property resulting from the working or operation of said premises and property during the life of this lease, and in this connection it agrees

to carry workmen's compensation insurance on all men employed by said company in connection with said premises.

10. The Lessee agrees that it will not suffer any mechanic's lien or other liens or encumbrances to be filed against said premises or property during the life of this lease for the non-payment of any debts or other claim in connection with the operation and development of said property, and it agrees to post three (3) notices in conspicuous places on said property above described that the said property is being held and operated under a lease from the Lessor, and that the Lessor is not liable for any debts of the Lessee.

It is mutually agreed and understood that the Lessee shall have the right to assign this lease or sublet said premises with the written consent of the Lessor, provided that after two years from date this lease may be freely assigned by Lessee without such consent upon written notice being given Lessor. Consent is hereby given to such assignment by Lessee to a corporation to be formed by it for the purpose of operating the leased premises.

It is further mutually understood and agreed that upon the cancellation or termination of this lease the Lessee shall have ninety days within which to remove all buildings, machinery, and equipment placed in and upon said property by it during the life of said lease.

It is further agreed that upon the expiration, termination, or cancellation hereof, the Lessee shall, upon the request of the Lessor, execute any documents necessary to release the said property of the Lessor from this lease.

It is further mutually understood and agreed that the Lessee shall pay all taxes levied against the leased premises and against any property, equipment, or machinery located on said premises which belong to the Lessee. In the

event of the levy of severance taxes, the parties shall bear their share in proportion to their interest in production.

It is further mutually understood and agreed that should the Lessee fail, refuse, or neglect to carry out or perform any of the terms, covenants and conditions herein contained upon its part to be performed and fulfilled, then and in that event the Lessor shall have the right, privilege and option of cancelling and terminating this lease on 30 days written notice of his intention so to do served by regular mail upon the Lessee address at 4722 Broadway, Kansas City 12, Missouri; provided, however, that the Lessee does not cure said defaults within said 30 day period and if the defaults are not cured during said 30 day period and this lease is thereupon cancelled or upon the expiration thereof the Lessee agrees that it will surrender and deliver up possession of said premises and property to the Lessor and upon its neglect, failure, or refusal so to do Lessor is hereby given the right, privilege, and option of entering in and upon said premises and property and of ousting the Lessee and all persons holding by, through or under it, with or without force and with or without process of law.

It is further mutually understood and agreed that the terms, covenants and conditions hereof shall extend to and be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, these presents have been executed

the day and year first above written.

LESSOR:

MASTER CORP.

ATTEST: (S E A L)

By _____
President

Asst. Secretary

LESSEE:

SENECA MINES, INC.

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SEP 17 1956

ATTEST: (S E A L)

By _____
Vice-President

Secretary

STATE OF COLORADO
CITY and COUNTY OF DENVER } SS:

The foregoing instrument was acknowledged before me this 15th day of June, 1956, by A. C. BLUEMEL as President and ~~JOAN M. BLUEMEL~~ Richard S. Kitchen as Assistant Secretary of MASTER CORP., a corporation.

My notarial commission expires March 23, 1958
Witness my hand and official seal.

_____
Notary Public

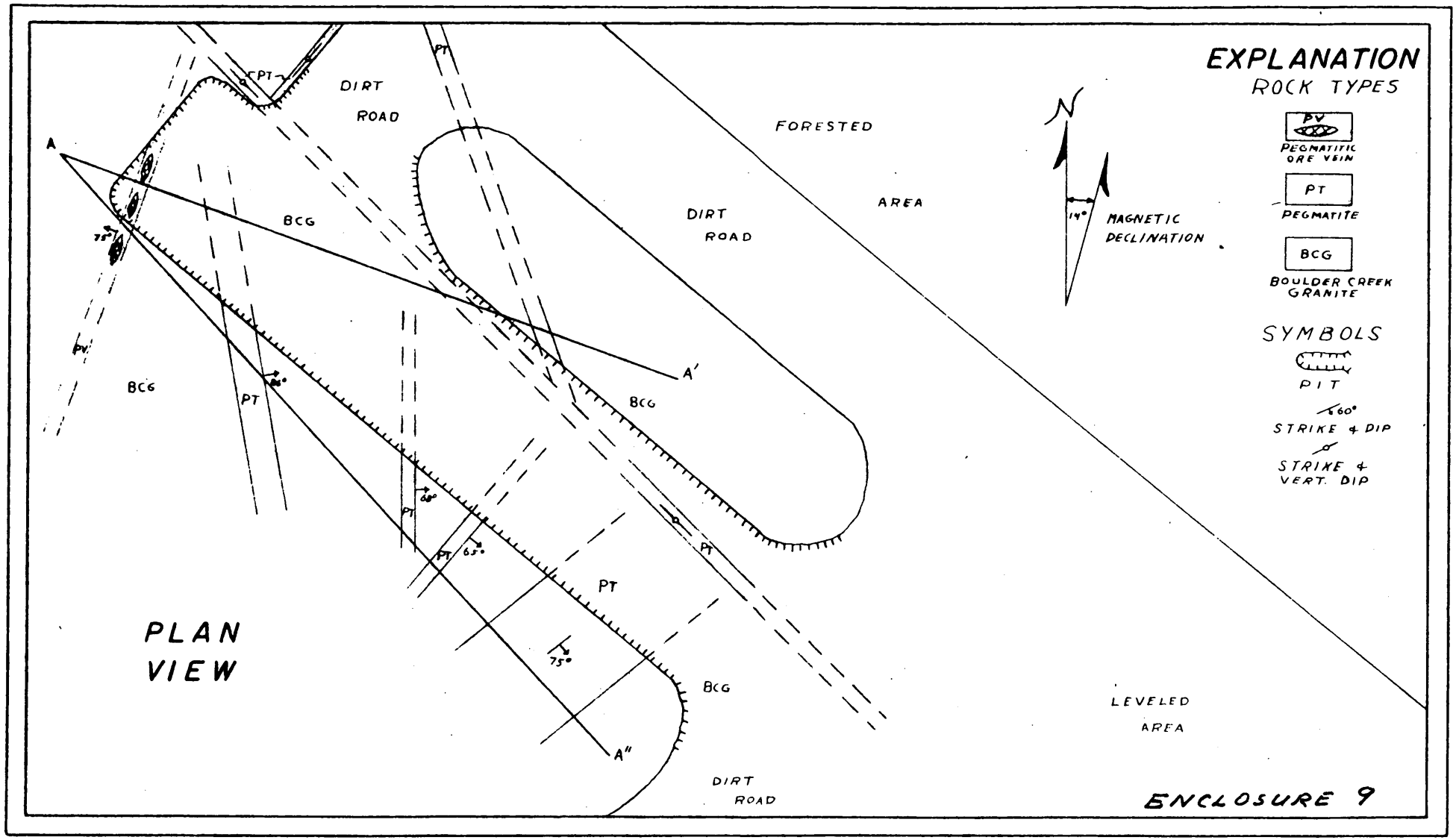
STATE OF Missouri
COUNTY OF Jackson } SS:

The foregoing instrument was acknowledged before me this 27 day of June, 1956, by Roy O Park as Vice-President of SENECA MINES, INC., a corporation.

My notarial commission expires March 18, 1957.
Witness my hand and official seal.

_____
Notary Public

# PIT NO. 2




SCALE

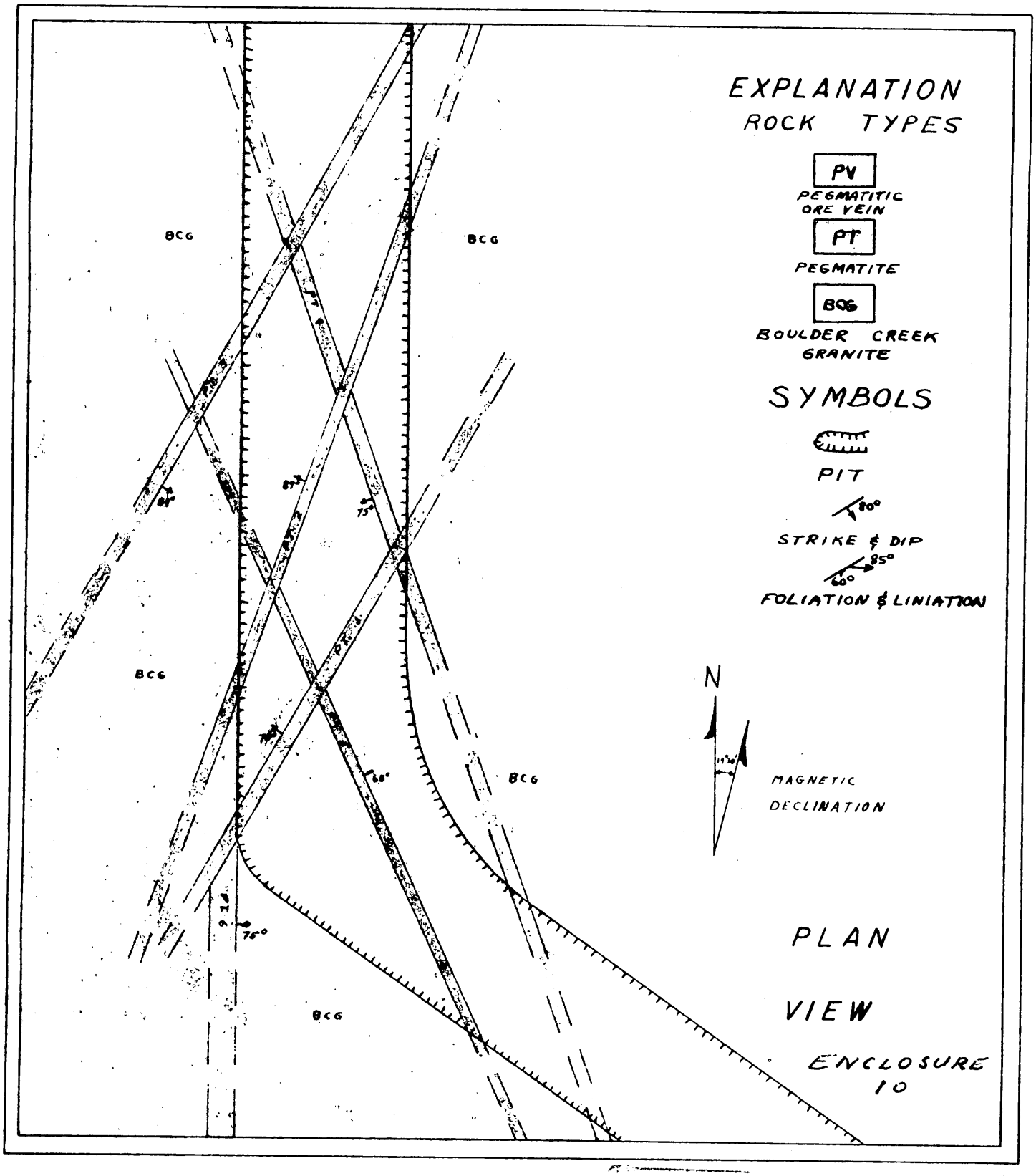
10 8 6 4 2 0 5 10 FEET

ONE INCH = TEN FEET

SENECA MINES, INC.
4725 Broadway
Kansas City, Mo

RECEIVED
SEP 17 1956

# PIT NO 4




SCALE

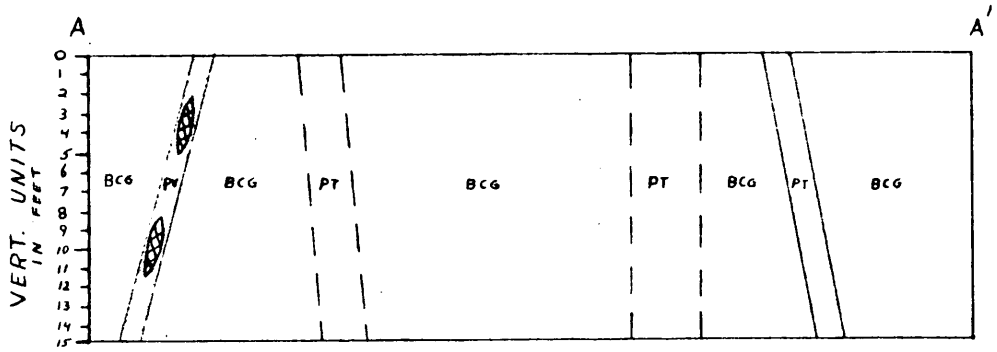
10 8 6 4 2 0 5 10

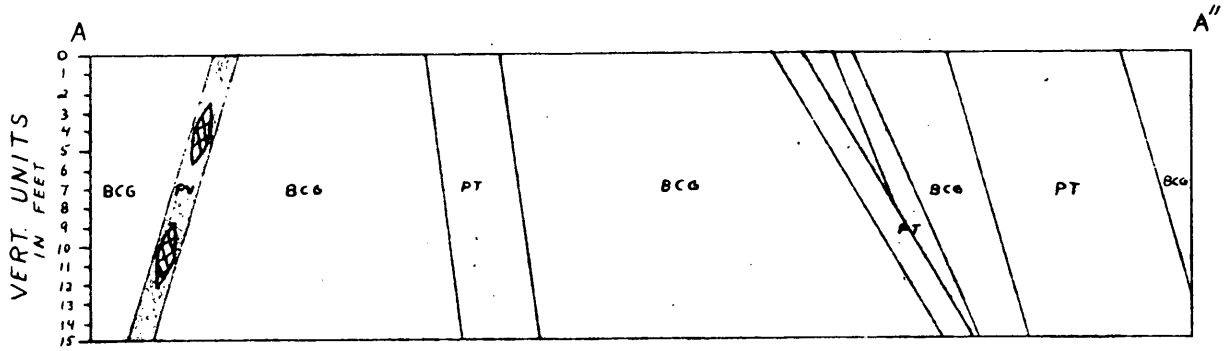
1 INCH = 10 FEET

SENECA MINES, INC.
4722 Broadway
Kansas City, Mo

RECEIVED
SEP 17 1956

# CROSS SECTIONS OF PIT NO. 2

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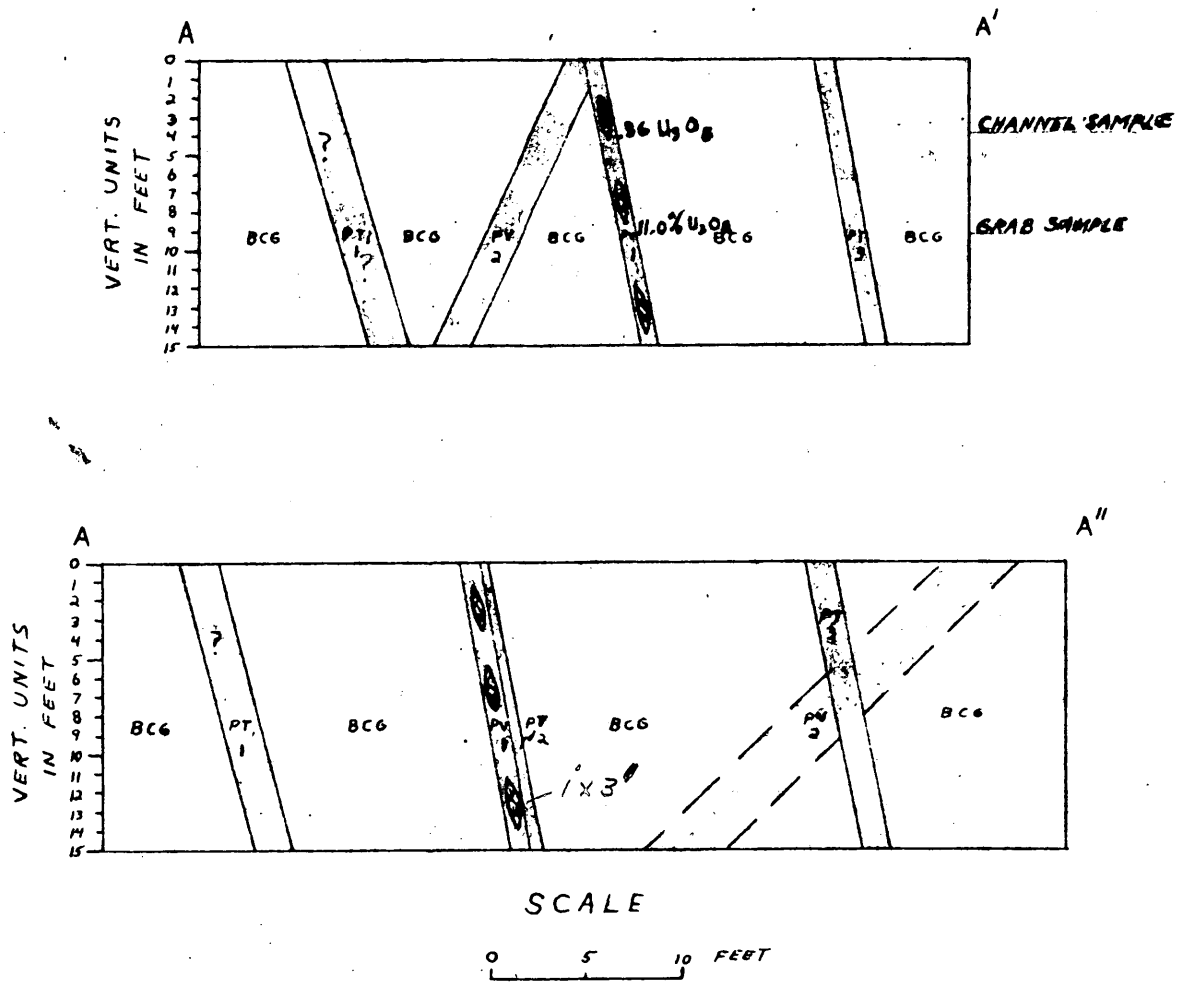
ENCLOSURE 8

**SENECA MINES, INC.**
4722 Broadway
Kansas City, Mo

# CROSS SECTIONS OF PIT NO. 1

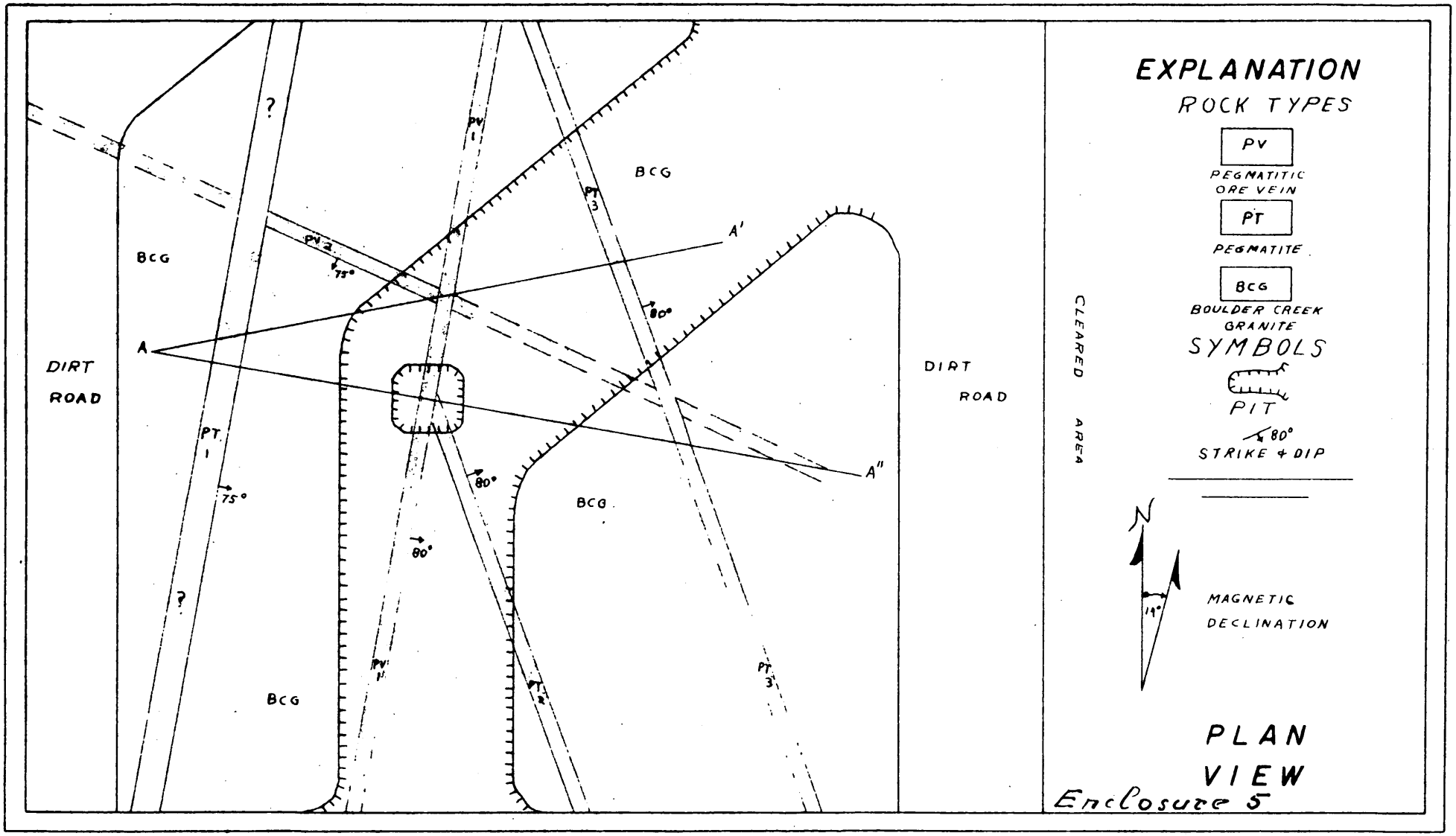



ENCLOSURE 6

SENECA MINES INC
4722 Broadway
Kansas City, Mo

RECEIVED
SEP 17 1956

# PIT NO. 1




SCALE

10 8 6 4 2 0 5 10 FEET

ONE INCH = TEN FEET

SENECA MINES, INC.
4722 Broadway
Kansas City, Mo

RECEIVED
SEP 17 1956

VULCAN SILVER-LEAD CORPORATION
100 PARK AVENUE
NEW YORK 17, N. Y.

AIR MAIL

MR. C. MITTENDORF

DEFENSE MINERALS EXPLORATION ADMINISTRATION

NEW DEPARTMENT INTERIOR BLDG.

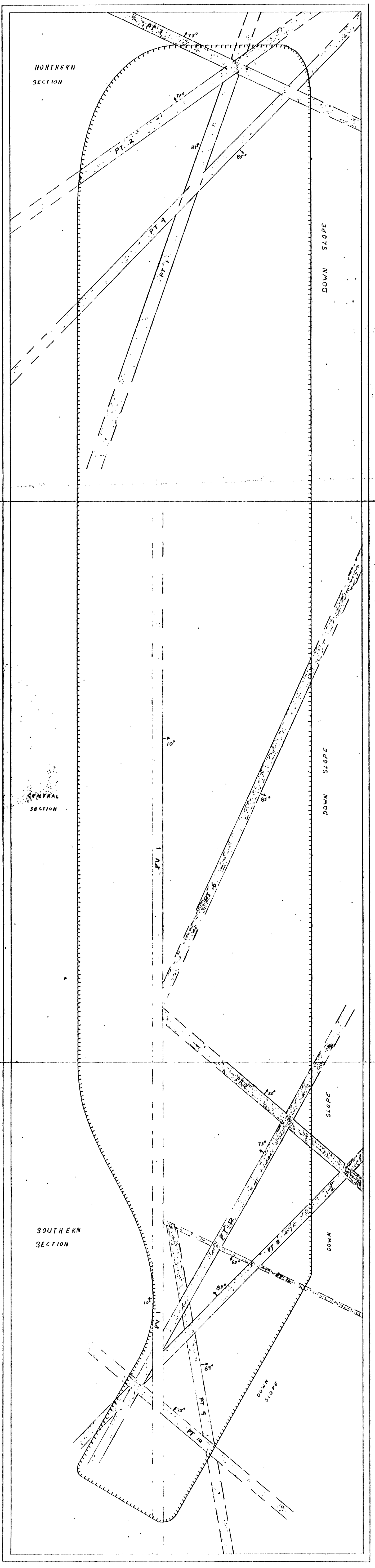
WASHINGTON, D. C.

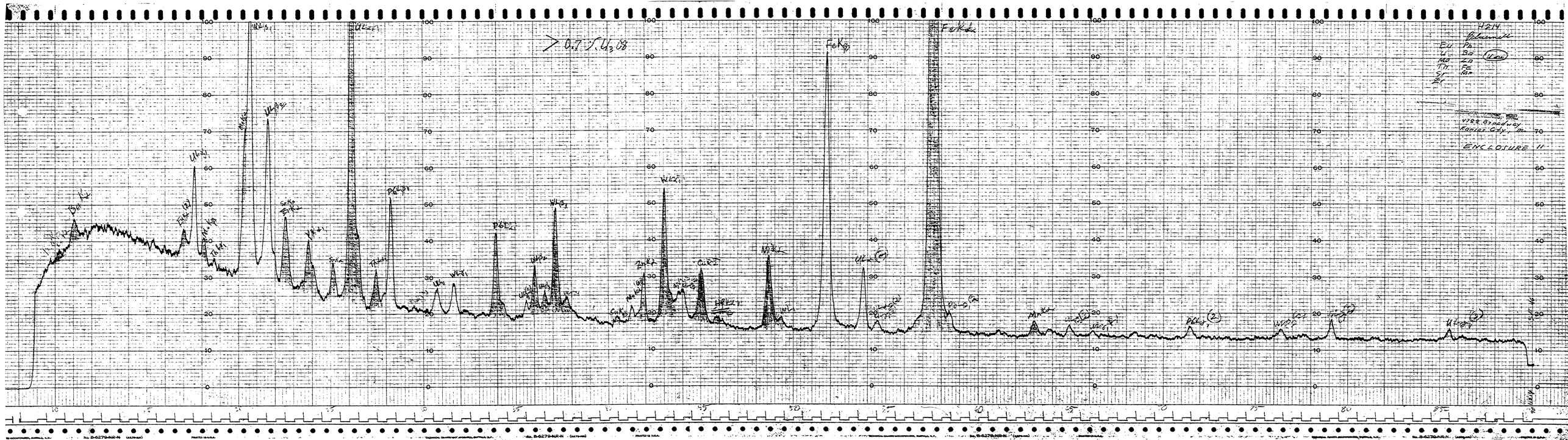
DIPLOMAT CLASP No. 97J
SUB. 32 NATURAL
10 x 13

ENCLOSURE 7

SENECA MINES, INC.
4782 Broadway
Kansas City, Mo

# PIT NO. 3




4214
Blumenthal
Eu Pa
U Ba
Mo La
Th Pr
Sr Ce
Zr
4122 Broadway
Kansas City, Mo.
ENCLOSURE II
> 0.7% U3O8
FeKα
FeKβ
MoKα
MoKβ
ULα1
ULβ1
ULβ2
ULγ1
PbLα1
PbLβ1
PbLβ2
WLα1
WLβ1
WLβ2
WLγ1
ZnKα1
ZnKβ
CuKα1
CuKβ
MnKα
MnKβ
SrKα
SrKβ
ZrKα
ZrKβ
BaLα
BaLβ
BaLγ
ThLα1
ThLβ1
ThLγ1
SeKα
SeKβ
RhKα1
RhKβ
PdKα1
PdKβ
AgKα1
AgKβ
CdKα1
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DyKβ
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HoKβ
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WKβ
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ReKβ
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RfKβ
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DbKβ
SgKα1
SgKβ
BhKα1
BhKβ
HsKα1
HsKβ
MtKα1
MtKβ
DsKα1
DsKβ
RgKα1
RgKβ
CnKα1
CnKβ
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NhKβ
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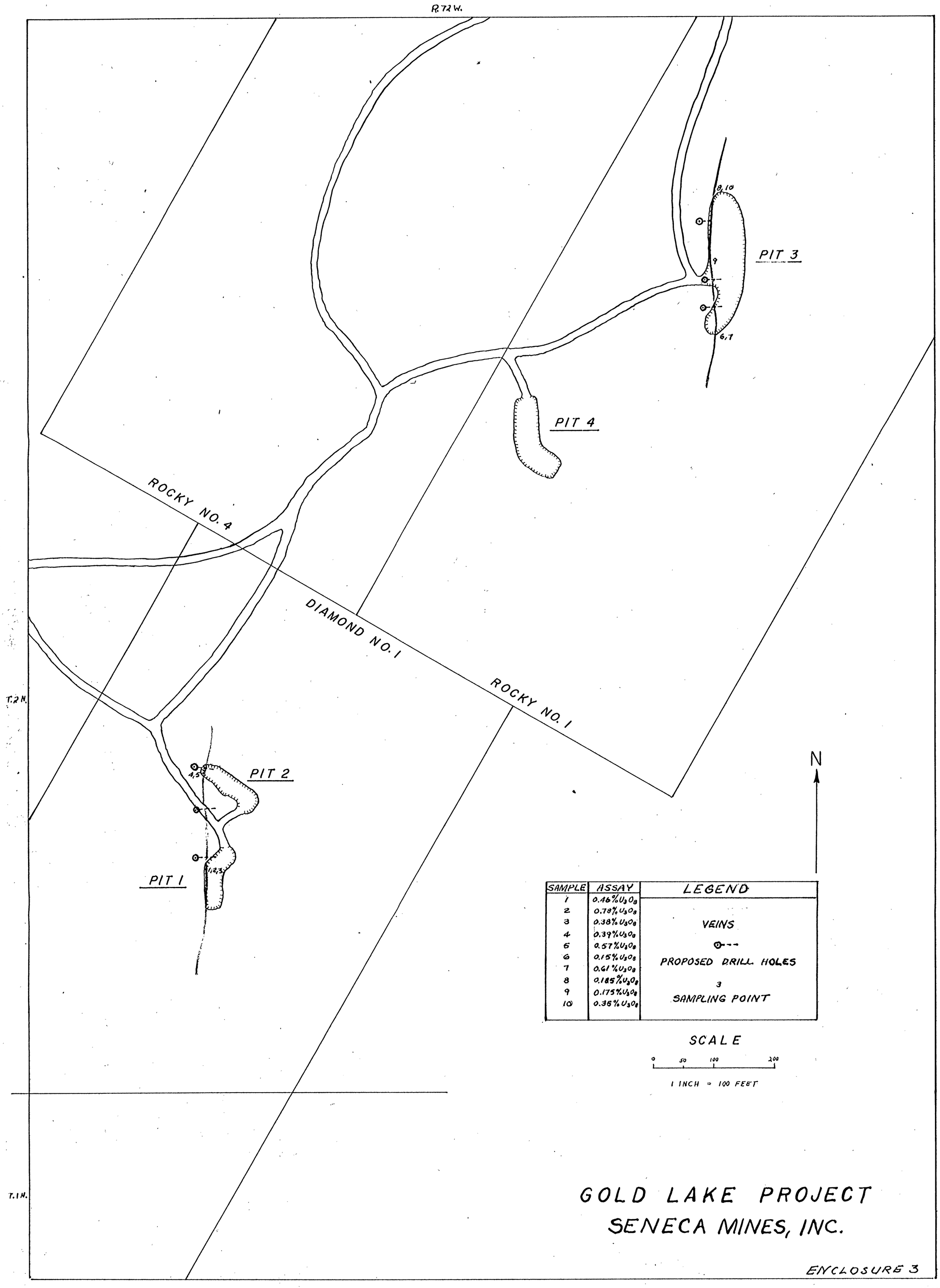
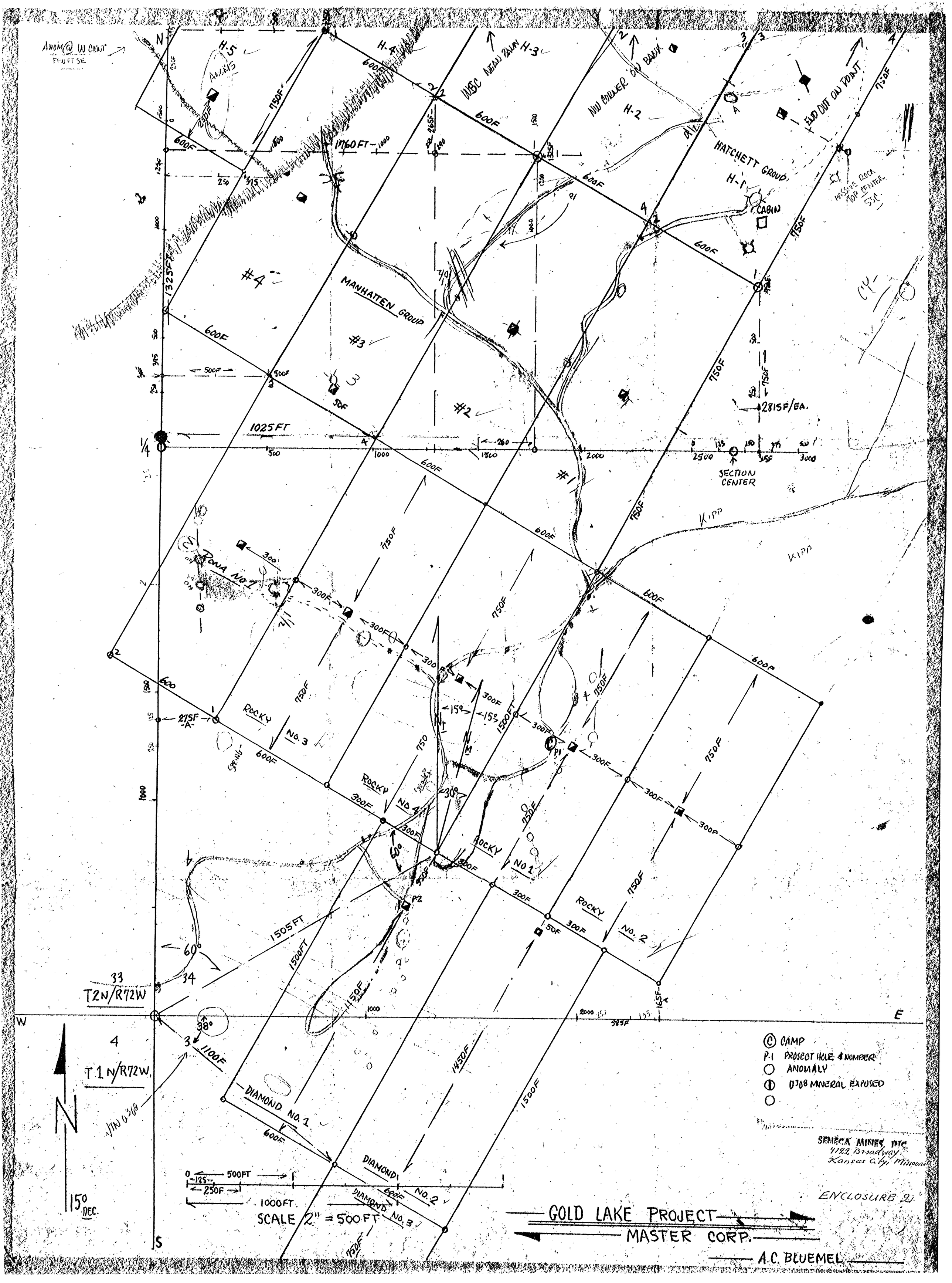
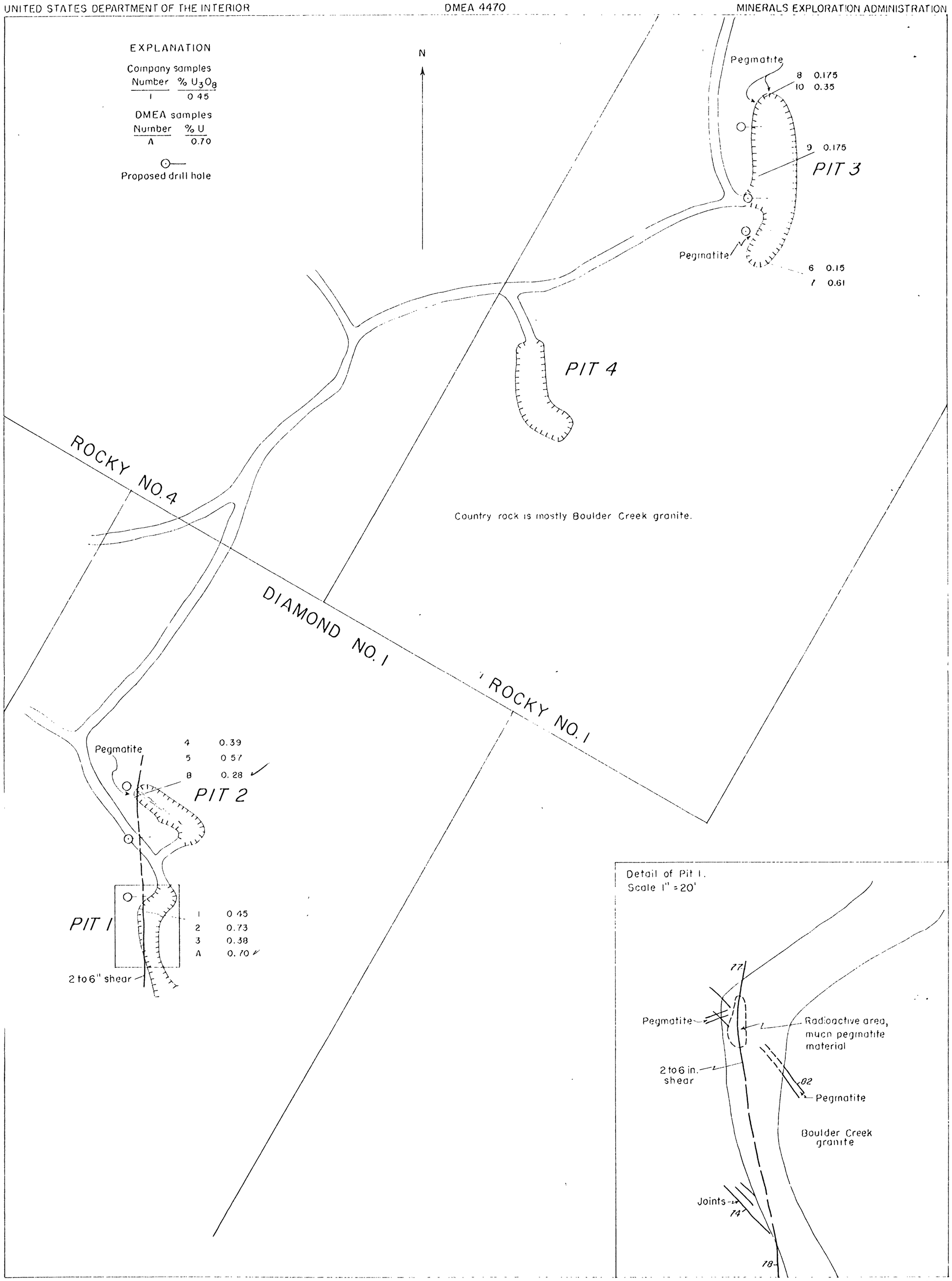



SENECA MINES, INC.
4722 BROADWAY
Kansas City, Missouri

10


ANOM @ W CENT FOOT SE
H-5
ANGELS
H-4
WBC HEAD BARN
H-3
NW CORNER OD BARN
H-2
END OUT OD POINT
HATCHETT GROUP
H-1
CABIN
MASSIVE ROCK TOP MINTER SEC
#4
MANHATTEN GROUP
#3
#2
#1
1325FT
1760 FT
1025FT
2815F/EA.
SECTION CENTER
KIPP
PONA No 1
ROCKY No. 3
ROCKY No 4
ROCKY No 1
ROCKY No. 2
1505FT
1500FT
T2N/R72W
T1N/R72W
DIAMOND No. 1
DIAMOND No. 2
DIAMOND No. 3
1100F
1450F
1500F
SCALE 2" = 500 FT
15° DEC.
CAMP
P-1 PROSECT HOLE & NUMBER
ANOMALY
U3O8 MINERAL EXPOSED
SENECA MINES INC.
4722 Broadway
Kansas City, Missouri
ENCLOSURE 2.
GOLD LAKE PROJECT
MASTER CORP.
A.C. BLUEMEL

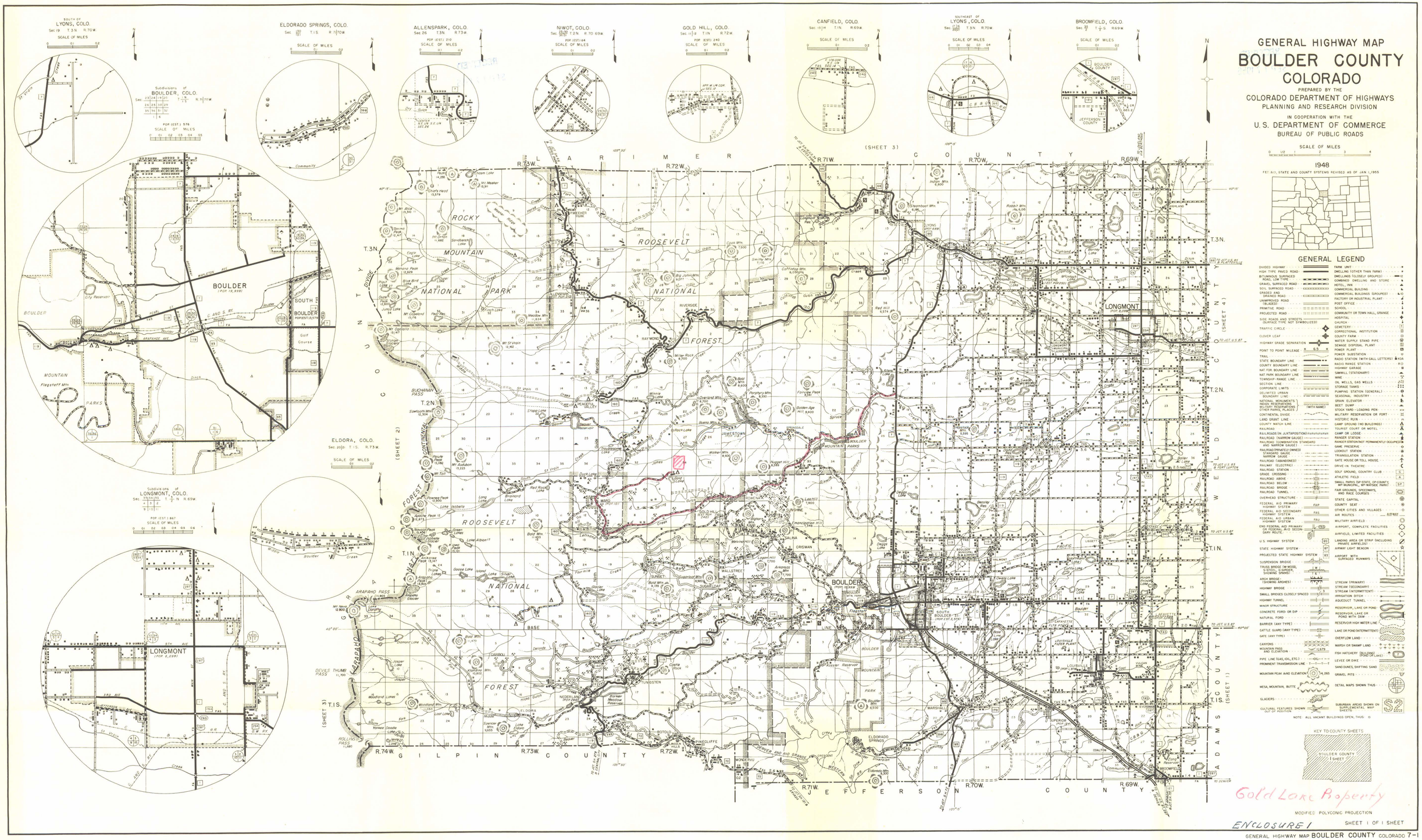



Base map by Seneca Mines, Inc.

F.B Moore, 1956

FIGURE 3.—GENERALIZED GEOLOGIC MAP OF FOUR PROSPECT TRENCHES SHOWING RESULTS OF SAMPLING, SENECA MINES, INC., BOULDER COUNTY, COLORADO.

100 50 0 100 200 Feet




ENCLOSURE 1

GENERAL HIGHWAY MAP BOULDER COUNTY COLORADO 7-1

SENECA MINES, INC.
4788 Broadway
Kansas City, Missouri