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UNIVERSITY OF UTAH RESEARCH INSTITUTE

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AREA
N.V.
Perish
Colado
Street.

November 21, 1979

Mr. Wayne Shaw
Getty Oil Company - Geothermal Division
P.O. Box 5237
Bakersfield, CA 93308

Dear Wayne:

Enclosed are copies of lithologic logs for the 18 shallow thermal gradient holes at Colado, and a brief summary of the implied stratigraphy by Bruce Sibbett and Michael Bullett. Samples of the cuttings are now being prepared for trace element chemical analyses. I will forward these results to you when they are available. We would like to begin some field mapping of the Colado area in the near future in order to develop a better understanding of the local geology. Would this work present any problems?

Sincerely,

Howard

Howard P. Ross
Project Manager

HPR:srm

enclosure

UNIVERSITY OF UTAH
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LITHOLOGY OF 18 SHALLOW THERMAL GRADIENT HOLES
COLADO AREA, NEVADA

by

Bruce Sibbett and Michael Bullett

In 1979, 18 thermal gradient holes were drilled by Getty Oil Company to evaluate the geothermal potential of the Colado area. The cuttings were subsequently released for study to the Earth Science Laboratory, UURI, through the DOE/DGE Industry Coupled Program. The locations, numbers and bottom hole temperatures for each hole are shown in Figure 1. Figures 2-5 illustrate the stratigraphic relationships between the drill holes across several log sections. All but one of the holes were 500 feet deep.

In general the Quaternary sediments consists of poorly consolidated gravel, sand and mudstone. The bedrock consist of slate, siltstone and sandstone of Triassic to Jurassic age (Johnson, 1977). Milky to clear quartz is widely scattered throughout the slate. Pyrite occurs separately within the slate. The pyrite and quartz may have formed from original constituents in the rock during metamorphism.

The Quarternary gravels consist of poorly sorted clasts of diverse lithologies. The sand and gravel are poorly cemented by clay and calcite. Mudstones contain subordinate amounts of coarse sand and gravel, which probably occur as thin lenses. No stratigraphy or marker beds could be found in the alluvium. The upper one-to-two hundred feet of mudstone in the western holes is probably Lake Lahontan sediments.

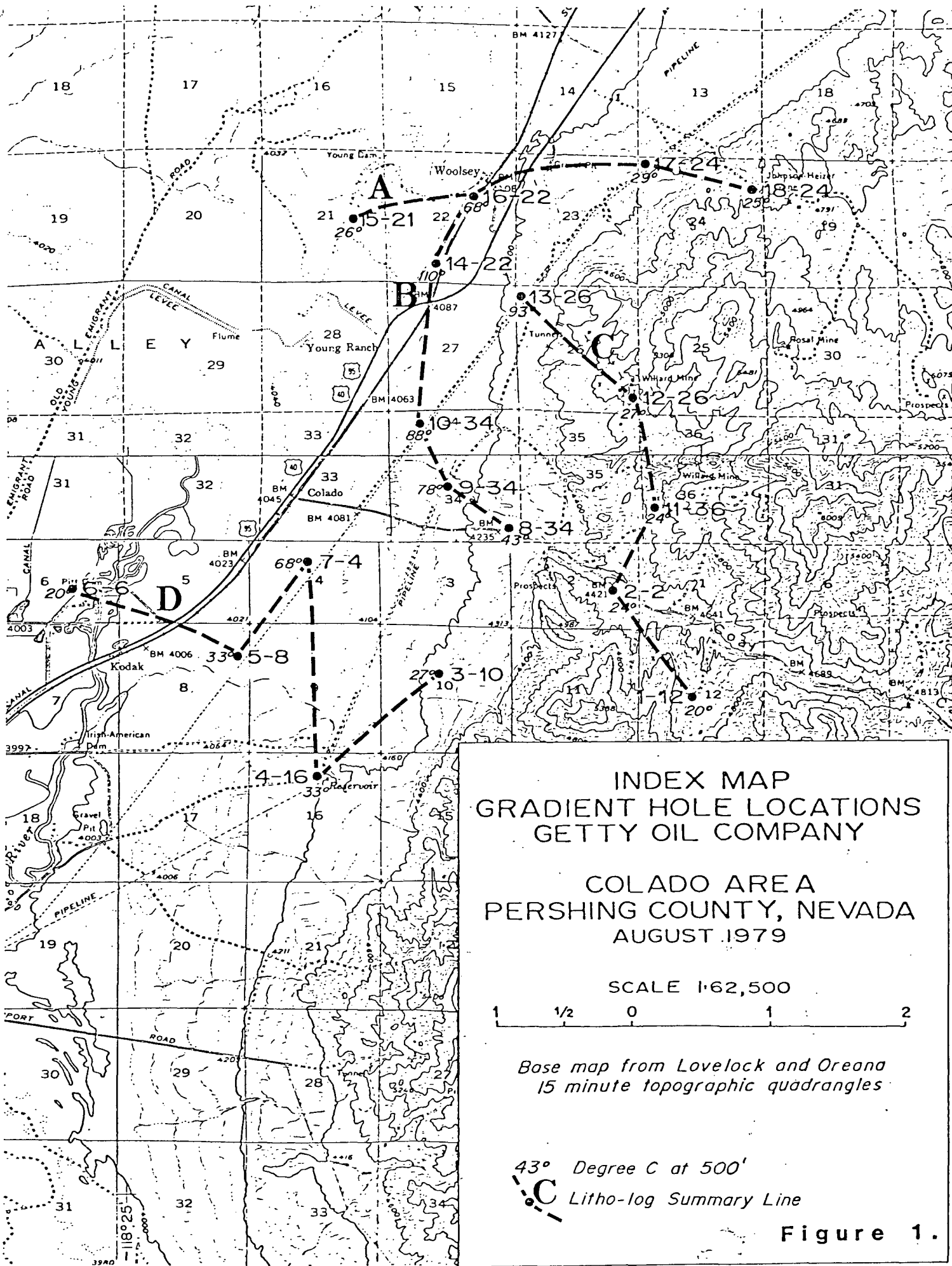
Only limited structural information could be determined from the cuttings. A range front fault probably occurs under alluvium between holes 16-22 and 17-24 (index map) and trends south-southeast to near the mouth of Coral Canyon, then turns south-southwest. The holes west of this line penetrated only alluvium, and the holes east of the line intercepted bedrock a hundred feet or less below the surface.

The only mineralization of possible significance occurs in hole 14-22. Pyrite cubes occur interstitially within the gravel and sand at depths of 80 to 500 feet (Figure 3), and appear to have formed after deposition of these sediments. Pyrite is particularly abundant and also occurs within clasts between depths of 280 and 380 feet. The cuttings are angular, green and appear silicified in this zone. Some rounded silicified clasts are also present in this zone, and some of this mineralization may therefore predate deposition of the sediments. Colado 14-22 is also the hottest of the gradient holes having a temperature of 112.6°C at 200 feet. The bottom hole temperature is 110.3°C at 500 feet.

Minor pyrite is present in the lower half of hole 16-22, one-half mile north of 14-22.

REFERENCE

Johnson, M. G., 1977, Geology and mineral deposits of Pershing County, Nevada; Nev. Bur. Mines and Geol., Bull. 89, 115 p.



INDEX MAP
GRADIENT HOLE LOCATIONS
GETTY OIL COMPANY

COLADO AREA
PERSHING COUNTY, NEVADA
AUGUST 1979

SCALE 1:62,500



Base map from Lovelock and Oreana
15 minute topographic quadrangles

43° Degree C at 500'
C
Litho-log Summary Line

Figure 1.

← West

East →

Colado 15-21

Colado 16-22

Colado 17-24

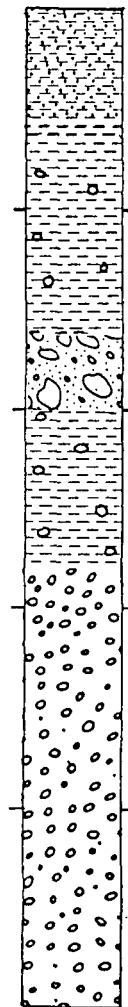
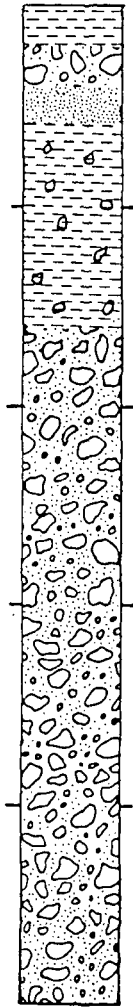
Colado 18-24

Elev. 4040

Elev. 4080

Elev. 4320

Elev. 4520



Depth
feet

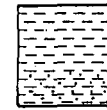
- 100

- 200

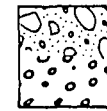
- 300

- 400

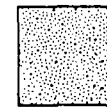
- 500



Clay or mudstone
Quat. lake sed., sandy



Gravel, alluvium
Fine gravel



Sandstone



Siltstone, pale red
to gray



Slate, dark gray

Figure 2.

Lithology log summary line A

← North

Southeast →

Colado 16-22

Colado 14-22

Colado 10-34

Colado 9-34

Colado 8-34

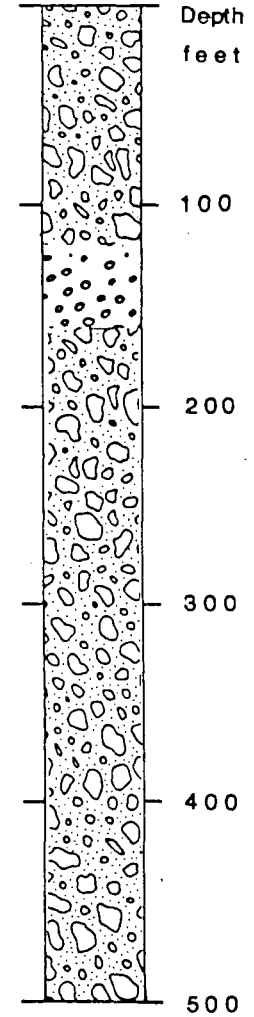
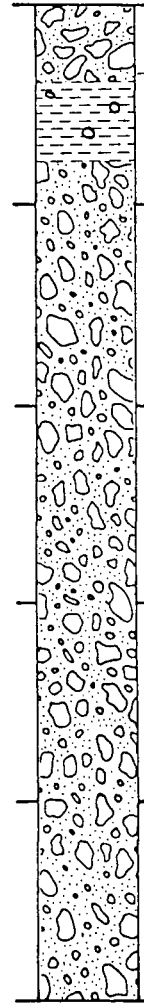
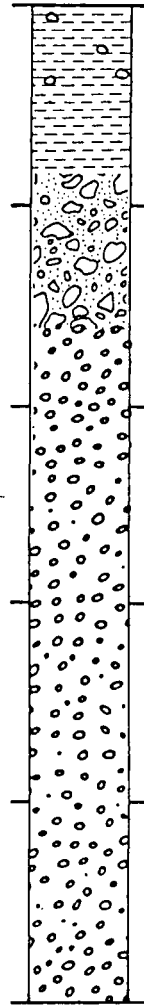
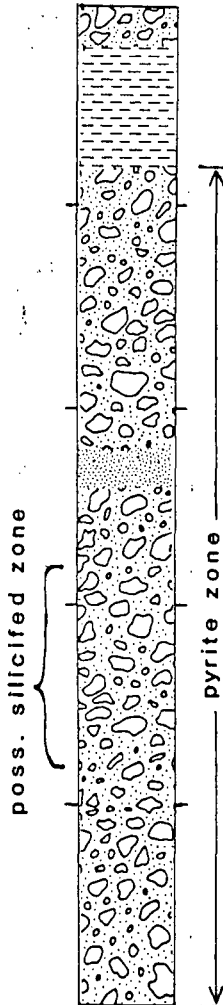
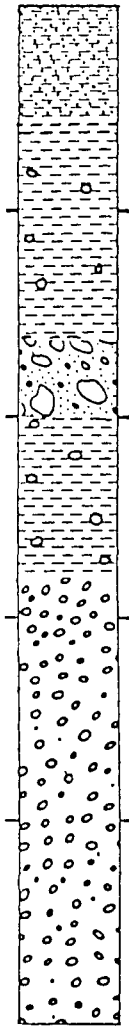
Elev. 4080

Elev. 4080

Elev. 4120

Elev. 4160

Elev. 4240



Depth
feet

100

200

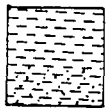
300

400

500

poss. silicified zone

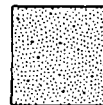
pyrite zone



Mudstone
sandy zone



Gravel
coarse
granule



Sand

Figure 3. Lithology log summary line B

← North

South →

Colado 13-26

Colado 12-26

Colado 11-36

Colado 2-2

Colado 1-12

Elev. 4240

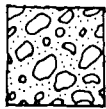
Elev. 4740

Elev. 4700

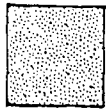
Elev. 4420

Elev. 4680

Depth
feet



Gravel, alluvium



Sandstone



Siltstone
Pale red to gray



Slate, dark gray

Figure 4. Lithology log summary line C

West ←

East →

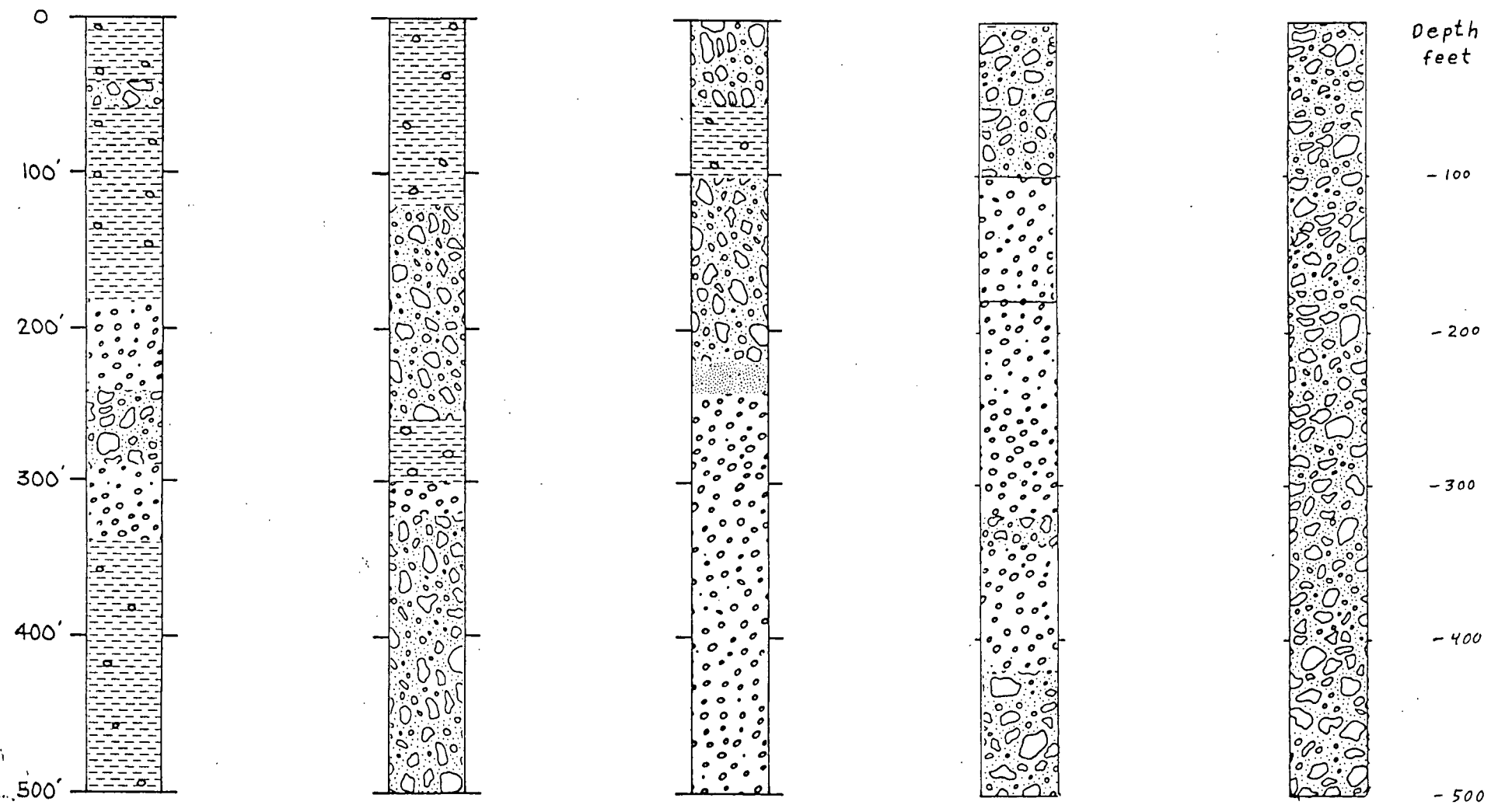
COLADO
6-6
ELV. 4000'

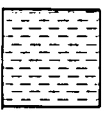
COLADO
5-8
ELV. 4020'

COLADO
7-4
ELV. 4040'

COLADO
4-16
ELV. 4190

COLADO
3-10
ELV. 4240



 Clay or mudstone
Quat. Lake sed.

 Sandstone

Coarse
Fine
 Gravel, alluvium


 Siltstone, pale red to gray

Figure 5.
Lithology log summary line D