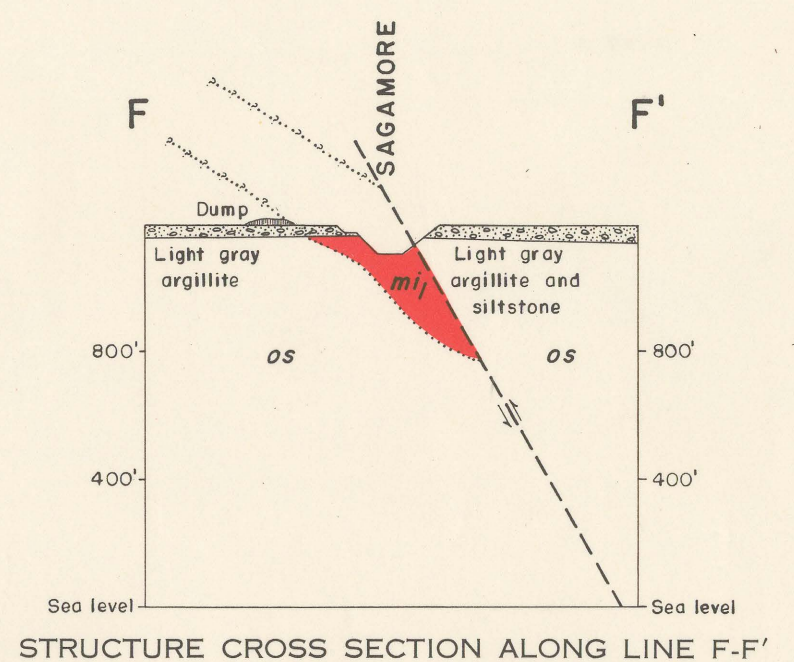
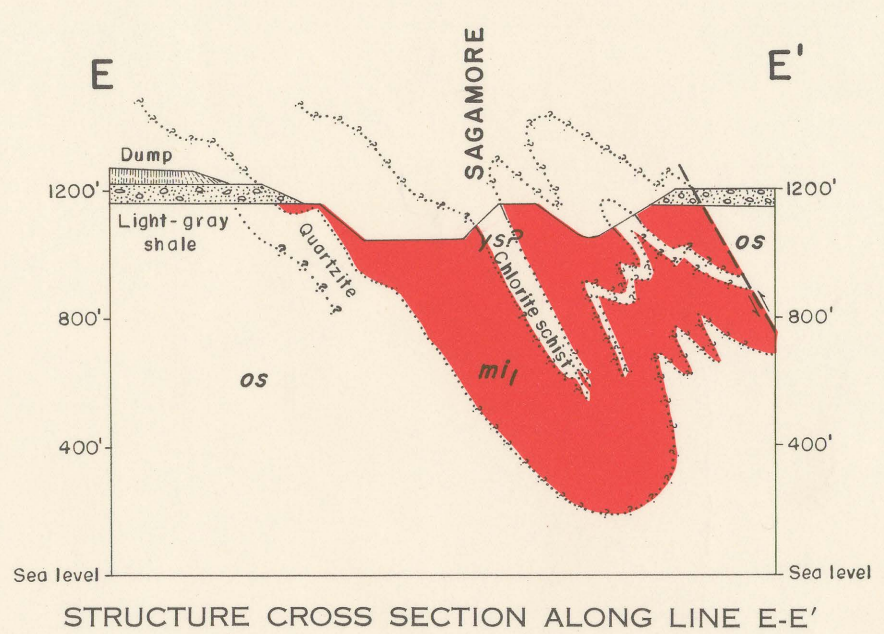
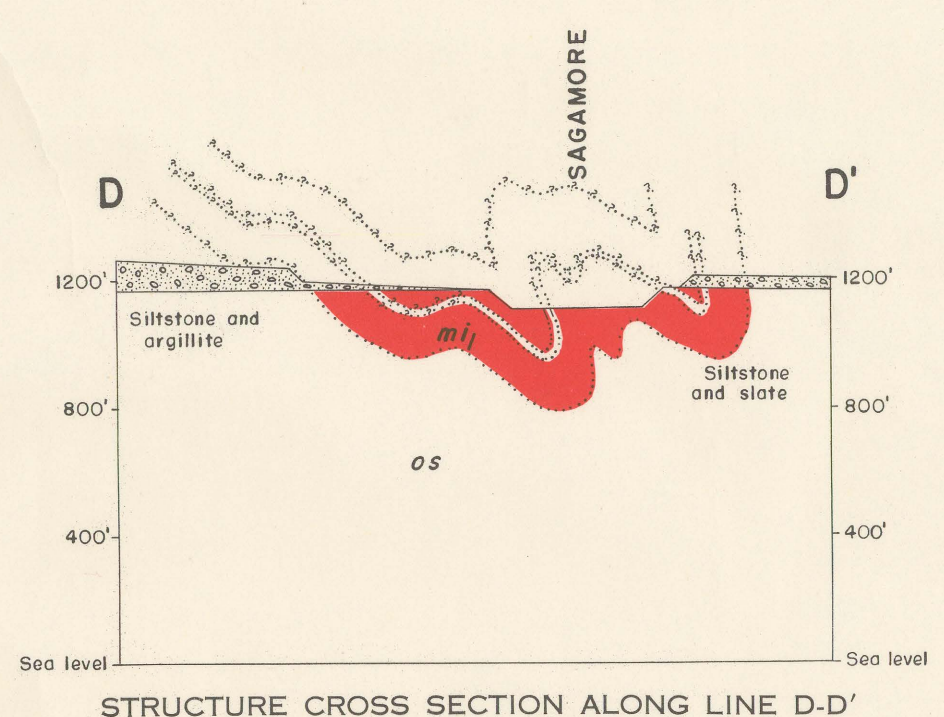


- EXPLANATION**
- Glacial drift
Shown on sections only
 - Argillite and slate
Gray and black, generally ferruginous, and interbedded with gray and black, generally ferruginous, and interbedded with red, brown, or buff, to include upper iron-formation lenses, all that are siliceous, lenticular, and partly argillite
 - Main iron-formation
Includes a thick-bedded facies, arg., and a thin-bedded facies, sil., that may overlap or may occur separately
 - Siliceous argillite and siltstone
Gray, light-green, or light-brown. Locally includes lenses of quartzite near the contact with the overlying iron-formation
 - Geologic contact, map
Solid where exposed continuously or at short intervals; dashed where covered, at irregular intervals or chiefly limited by subdued outcrops; dotted where indicated by drill holes and projection of mine data; curved where position is not well defined
 - Geologic contact, sections
Solid where exposed at the surface or chiefly limited by subdued outcrops; dotted where indicated by drill holes and projection of mine data; curved where position is not well defined
 - Fault, approximately located
Arrows on sections indicate relative movement
 - Anticline
Shows trace of axial plane and bearing and plunge of axis. Dashed where approximately located
 - Syncline
Shows trace of axial plane and bearing and plunge of axis. Dashed where approximately located
 - Plunge of minor anticline
Dashed where approximately located
 - Plunge of minor syncline
Dashed where approximately located
 - Strike and dip of beds
 - Strike and dip of beds where upper bed cannot be distinguished
 - Strike and dip of overturned beds
 - Strike of vertical beds
 - Outline of pit bank
Dashed the represent bottom of bank
 - Vertical drill hole
Shows rock at bedrock surface
 - Inclined drill hole
Shows rock at bedrock surface
 - Drill hole
From analyses indicate that bedrock is probably iron-formation
 - Drill hole
From analyses indicate that bedrock is probably well rock
- Mine coordinates are identified by letter as follows:
S. Sagamore
- Abbreviations**
- | | |
|------|----------------|
| arg | Argillite |
| br | Brown |
| carb | Carbonate |
| ch | Chert |
| ck | Coarse |
| dk | Dark |
| fe | Ferruginous |
| fm | Formation |
| gn | Green |
| gr | Gray |
| if | Iron-formation |
| lgt | Light |
| phyl | Phyllite |
| qtz | Quartz |
| qt | Quartzite |
| sch | Schist |
| ser | Sericitic |
| sh | Shale |
| sil | Siliceous |
| sl | Slate |
| st | Siltstone |
| wh | White |
- NOTE: Quotation marks indicate the description of the rock is from mining company records. All other descriptions are the result of studies by the U.S. Geological Survey.

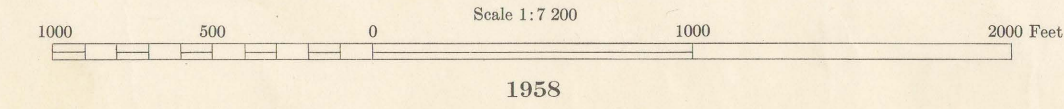
Base from U.S. Geological Survey Brainerd quadrangle and from maps provided by the M. A. Hanna Company. Published with permission of the operating mining companies.

Geology by R. G. Schmidt and C. E. Dutton, 1951-56



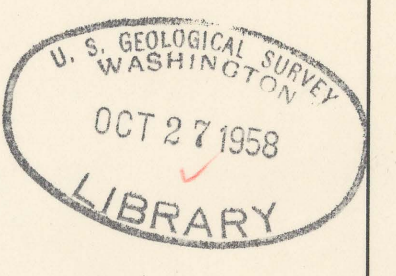
SHEET 4
BEDROCK GEOLOGY OF THE SOUTHWESTERN PART OF THE NORTH RANGE, CUYUNA DISTRICT, MINNESOTA

By
R. G. Schmidt



1958

Minnesota (North Range) Geol. 1:7,200, 1958
sheet 4, 5, attached
cop. 1.



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Sheet 4
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