

University of Wisconsin-Extension
GEOLOGICAL AND NATURAL HISTORY SURVEY
3817 Mineral Point Road
Madison, Wisconsin 53705

M.E. Ostrom, State Geologist and Director

WAUKESHA LIME AND STONE CO. FAULT

by

M.E. Ostrom

Open-File Report 61-1

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1961

June 26, 1961

Retyped from original

Mr. Charles Coburn
Waukesha Lime & Stone Company
Waukesha, Wisconsin

Dear Mr. Coburn:

In accordance with our telephone conversation of June 22, 1961, the day I visited your quarry, I am writing you this letter. It is intended that this letter serve as an explanation of the fault which can be seen in the west quarry face.

In 1931 F. T. Thwaites of the Wisconsin Geological and Natural History Survey examined the Waukesha Lime and Stone Company quarry in the course of a broader study of buried Precambrian rocks of Wisconsin. He concluded (p. 733) it is "a normal fault with strike north 47 degrees east and a downthrow of over 45 feet to the southeast...." In 1935 Thwaites wrote a letter describing subsurface geological conditions in regard to "mineral springs" in the City of Waukesha and stated "A fault is exposed in one of the quarries of the city; it has a displacement of over 40 feet down on the southeast side and trends northeast-southwest."

The fault was noted by B. B. Shrock, also of the Wisconsin Geological and Natural History Survey, in 1930 (field notes on file at Survey). However, no mention was made of fault trend or geologic identification.

In about 1953 Mr. E. F. Bean, former State Geologist, wrote a personal letter describing the fault to the quarry company. All traces of this letter are gone, however those who read it recollect his describing the geologic formations adjacent to the fault as the Racine Formation on the southeast and the Waukesha formation on the northwest. Thus, it seems Bean also concluded the fault was downthrown on the southeast.

Since the work of these men continuing excavations to greater depths has exposed more rock. Consequently, correlation of geologic units on either side of the fault is not nearly as difficult today as it must formerly have been.

Generalized descriptions and Geologic identifications of the rock strata on either side of the fault are given below.

South Side of Fault (composite)

- ± 10' Glacial till
- 37' Dolomite, light gray, very fine grained to sublithographic, subconchoidal fracture, medium- to massive-bedded.
- 11' Dolomite, light gray mottled yellowish-brown, fine to medium grained, fossiliferous, moderately porous. Becomes less mottled and more fossiliferous towards base.
- 4' Covered by rubble.
- Racine Formation

Quarry Floor at West Face

- 8' Dolomite, same as 11-foot section described above.
- 11' Dolomite, light gray, fine grained compact, very cherty in nodules and lenses, thin-to medium-bedded.
- 5' Dolomite, very light gray mottled dark gray, fine to medium grained, compact, thick- to medium-bedded.
- 12' Dolomite, very light gray, fine to medium grained, compact, massive with many thin black lamissae parallel to bedding and averaging about 3" apart.
- Waukesha Formation

Quarry Floor

North Side of Fault (composite)

- ± 10' Glacial till
- 3' Dolomite, light gray, fine grained to sub-lithographic, compact, medium- to massive-bedded.
- 24' Dolomite, light gray mottled light yellowish brown, fine to medium grained, slightly porous, fossiliferous. Becomes more fossiliferous toward base.
- 10' Dolomite, light gray, fine-grained, compact, cherty, with scattered fossils, medium-bedded.
- 6' Covered by rubble.
- Racine Formation

Quarry Floor at West Face

- 5' Dolomite, light gray fine grained, compact, medium-bedded, and shale, greenish gray, mottled gray with some reddish-brown, very dolomitic, hard, thinly laminated, beds up to 15".
- Waukesha Formation

Base of Drainage Ditch

On the basis of this description the amount of displacement of the contact between the Racine and Waukesha Formation along the fault is 37 feet. Because of the difficulty of measuring the thickness of the section accurately, where it is shown in the description below the "Quarry Floor at West Face" it is possible that the displacement is as much as 40 feet, but certainly no less than 37 feet, down on the southeast side of the fault.

The trend of the fault is far more difficult to determine because there is no other place in the quarry where the fault itself can be seen. On the east of, and adjacent to, the drainage ditch in the central part of the quarry northeast of the fault exposure there is a jumbled mass of rock that has remained untouched by quarrying. This mass rises some 30 feet above the quarry floor and is composed of Racine dolomite along its south and west sides, down to the base of the ditch. In the ditch at the northwest side of the mass is a very shaly dolomite. This dolomite is considered to be Waukesha and is believed to be northwest of the fault. It is correlated with the five feet of mottled dolomite described from the southwest side of the fault. The trend of the fault in the quarry is therefore believed to be along a line connecting the fault as seen in the west quarry wall with the north side of the undisturbed rock mass to the northeast. The fault, therefore, trends approximately northeast-southwest.

On an attached sheet is a map indicating probable fault zones using the top of the Galena Dolomite Formation as reference datum and based on studies of water well samples in the files of the Wisconsin Geological and Natural History Survey. Although much more data is required before an accurate picture can be drawn, the data available indicate complex faulting of the area.

On the map all displacement indicated between any two wells is shown by a single fault. However, it is more likely that a series of en echelon step faults accounts for the total displacement. Thus, displacement along any one fault would be some amount less than the total displacement shown.

If you have any further questions regarding your quarry, or if there is some way in which you feel we can be of service to you, please do not hesitate to contact us.

Very truly yours,

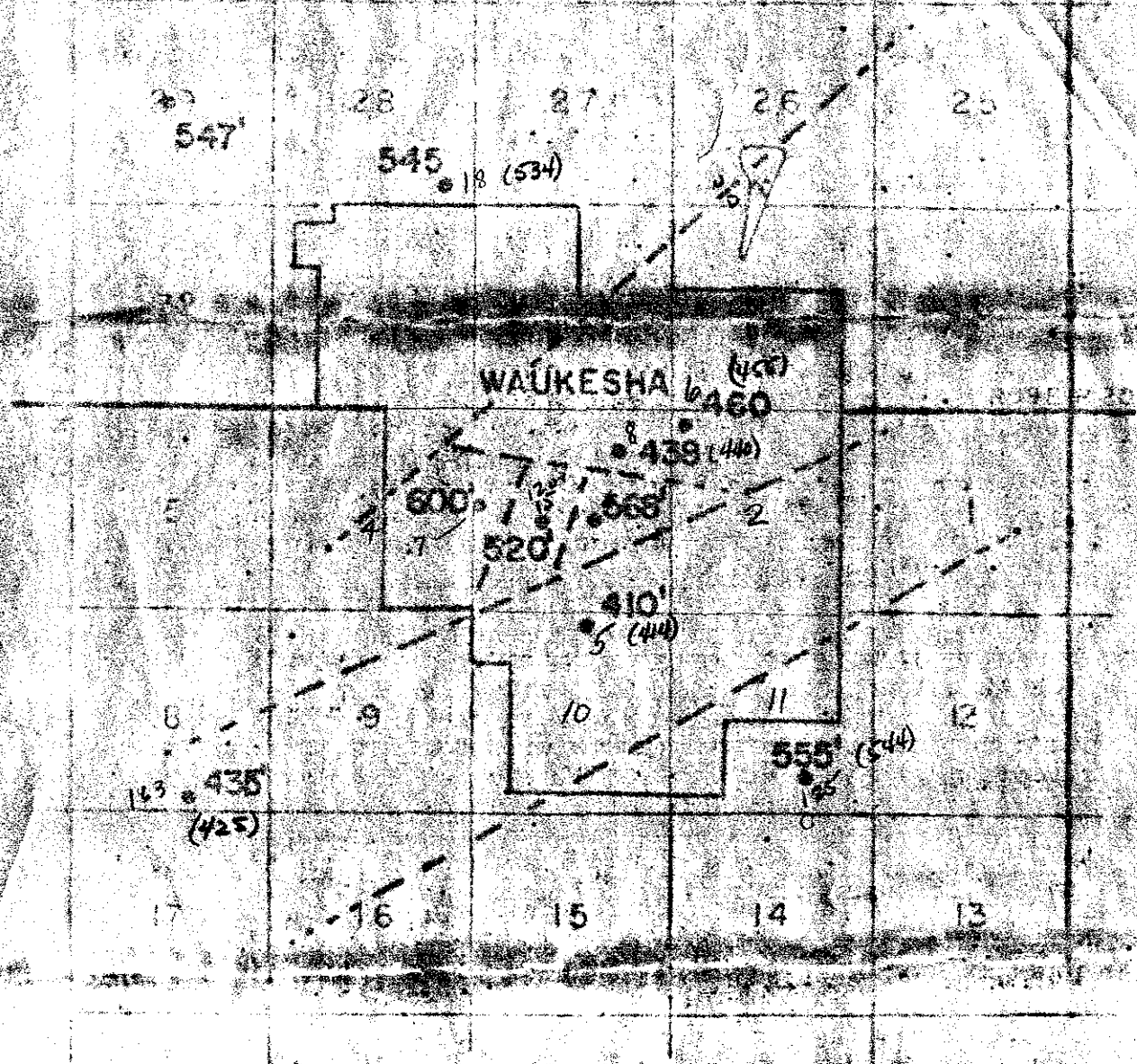
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Dr. M. E. Ostrom
Asst. State Geologist

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POSSIBLE FAULT ZONES IN WAUKESHA AREA BASED ON
VERTICAL DISPLACEMENT OF TOP OF GALENA DOLOMITE

(Wisc. Geol. Surv. Geol. Survey Report No. 100, 1907, Modified by D. G. Brown)



Legend

- Fault zone trend
- Water well location
- 545' Elevation top of Galena Dolomite Formation