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PRELIMINARY RECONNAISSANCE INVESTIGATION OF THE BOGUS
RIVER SWAMP, LANGLADE COUNTY, WISCONSIN

by

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In the latter part of September 1966, a meeting was held in Madison to discuss the feasibility of cranberry culture and/or peat production in the Bogus Swamp, Langlade County. Present were Mr. Francis Gilson, Agricultural Agent, and Mr. Albert Tschudy, Industrial Resource Agent, both of Langlade County, Professor Marvin Beatty of the University of Wisconsin Soils Department, and George Hanson, Director of the University of Wisconsin Geological and Natural History Survey.

Professor Beatty noted that he had made some borings in the marsh that showed a substantial thickness of reed-sedge peat that might lend itself to commercial development. Mr. Tschudy noted that there were persons interested in developing the swamp for cranberry culture. The question raised was whether there was an adequate supply of water for developing cranberry bogs and, if so, could both a peat and cranberry industry be developed in the swamp.

In a subsequent letter to Mr. Tschudy, Mr. Hanson proposed that a preliminary reconnaissance study be made of the geology and hydrology of the area to assess the general feasibility of the proposed development. The reconnaissance survey was made on October 16 by P. G. Olcott and Dr. M. E. Ostrom of the survey staff who reported their findings as follows:

The Bogus Swamp is located about $2\frac{1}{2}$ miles south of the village of Summit Lake in sections 14, 15, 22, 23, and 24, T.33N., R.10E., in Langlade County. The swamp is in the drainage basin of the East Branch of the Eau Claire River which is part of the Wisconsin River drainage. This stream originates in the Bogus Swamp but apparently receives intermittent flow during high water through a well defined channel from Deep Woods Lake.

Deep Woods Lake is interconnected by streams with 2 small unnamed lakes, Bass Lake, Greater Bass Lake and Summit Lake. The East Branch Eau Claire River flows along the northeastern edge of Bogus Swamp to Bogus Lake and then continues in a generally southeasterly direction for about 6 or 7 miles before swinging southwestward and flowing into the Antigo flats. Many land-locked "pot-hole" lakes and marshes cover the drainage basin of the East Branch Eau Claire River.

The Bogus Swamp and its associated drainage lies between the terminal and a recessional moraine of the Langlade Lobe of the Lake Superior Glacier. Contrary to the glacial map of the area which shows outwash and major terraces, (F. T. Thwaites, 1943, Pleistocene of Part of Northeastern Wisconsin) ice stagnation features such as kames and kettles predominate. Some stratification and sorting was observed at isolated exposures, but in general surficial material consists largely of unsorted and unstratified glacial drift. Grain size ranges from medium to fine sand up to small boulders 1 to 2 feet in diameter.

A test boring was made with a 4" power auger adjacent to the intermittent stream between Deep Wood Lake and Bogus Swamp in the NE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 15, T. 33N., R. 10E. The log of the boring is listed below along with the drillers log of a well located in the town of Summit Lake in the NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 1, T. 33N., R. 10E.

<u>Test Boring</u> <u>at outlet to Deep Wood Lake</u>	<u>Drillers log</u> <u>well in Summit Lake</u>
0-8 Fine to medium grained sand and gravel	0-4 Topsoil
8-13 No sample, assumed sand and gravel	4-50 Clay, hardpan, and rocks
13-17 No sample, assumed sand	50-72 Sand and gravel
17-19 No sample, assumed sand and gravel	72-76 Gravel
19-32 Silt and fine grained sand, very wet	

- 33-36 No sample, assumed silt and fine grained sand and some gravel
- 36-42 Silt and fine grained sand, very wet
- 42-45 No sample, assumed gravel
- 45-47 No sample, assumed very coarse gravel or boulders, unable to drill further. Water came up hole at 47'.

The test boring and driller log indicate poor water bearing characteristics down to a depth of 50 feet. However, the log of the Summit Lake well and an anomalously low reported water level in that well indicate that a water bearing sand and gravel formation may exist at depth. Considerable additional information is needed on the character, extent, and hydrologic properties of the glacial drift at depth to show the presence of such a water bearing formation.

Hydrologic observations made in the field in the Bogus Swamp area include altimeter elevations on some of the marshes, lakes, and streams. An attempted streamflow measurement of the East Branch Eau Claire River at old Highway 45 showed no determinable flow although water was standing in the channel. The intermittent stream between Deep Woods Lake and the Bogus Swamp was completely dry. Where observed, the swamp itself was very dry with little or no standing water. The hydrograph of a well located about 10 to 12 miles south of the Bogus Swamp area in section 7, T.31N., R.11E., shows that regional ground-water levels probably are slightly below the long term average. The 1961 - 1966 portion of the long term Hydrograph is attached. A local resident also indicated that lake levels in the swamp area were only slightly below average level.

Altimeter elevations were made using a bench mark near the junction

of the East Branch Eau Claire River and old Highway 45 (elev. 1629). As the day was very windy, accuracy of measurement may be questionable. However, it is felt the altitudes shown on the accompanying map are reasonably close to the true elevations. Contours on the water table determined from the altimeter elevations are shown on the accompanying map. Although these contours are of limited accuracy, they show an interpretation of groundwater movement in the area from the available data. Ground water movement shown by arrows, generally is from the divides shown on the map toward the south-east and toward the East Branch Eau Claire River, perpendicular to the contour lines. Ground water moves in a southwesterly direction toward the Antigo flats under a steep hydraulic gradient south and west of the Eau Claire River basin divide.

Preliminary observations indicate that the Bogus Swamp has a poor potential for both surface and ground water. Present dry conditions and the intermittent stream entering the swamp indicated that surface water inflows occur only during high water stages. The swamp probably acts as a ground water recharge area during much of the year. The shallow test boring and the well log at Summit Lake show a poor potential for adequate ground water for cranberry culture. Water could be diverted from lakes surrounding the swamp. However, the recreational development of these lakes would cause conflict of interest that would probably preclude their use as a water source.

Another marsh located about 2 miles west of Kempster on the Antigo flats and adjacent to the terminal moraine (see map) shows a much greater potential for water than the Bogus Swamp and may be more suitable for cranberry culture development. Although the marsh was not visited, the area is a discharge point for ground water moving southwestward under a steep hydraulic gradient through the moraine. The marsh also is underlain by permeable outwash deposits that have proved to be a productive

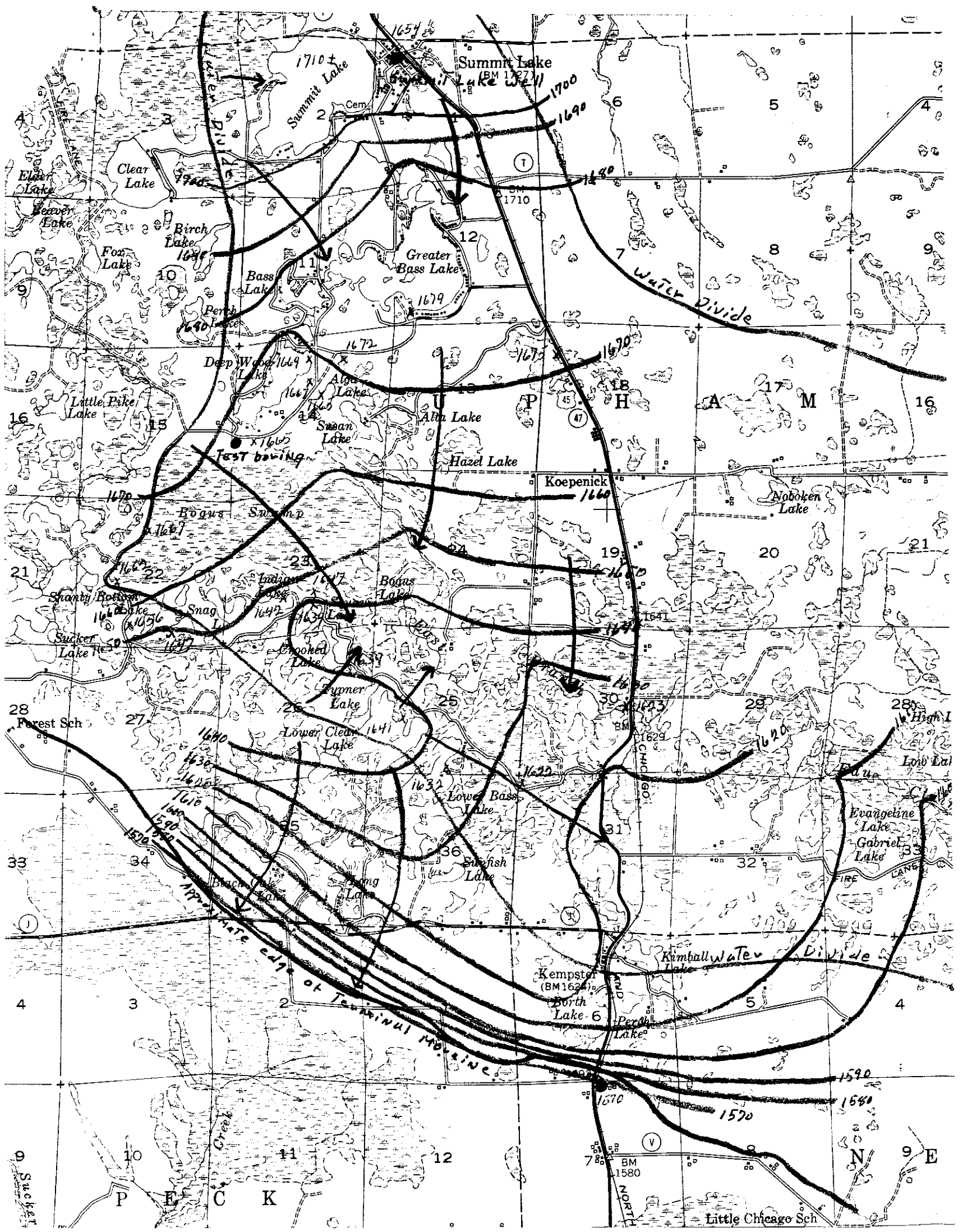
aquifer throughout the Antigo flats.

In summary, preliminary observations of the Bogus Swamp indicate water supply is inadequate for cranberry culture. There is some indication that a productive water bearing formation may exist at depth but considerable additional information is needed to determine this. Because of the lack of adequate water supply the Bogus Swamp probably could be best developed as a source of Peat. Another swamp, west of Kempster, appears to have a much greater potential for water and should be investigated to determine its suitability for cranberry culture.

Drainage of the Bogus Swamp would provide an excellent opportunity to determine hydrologic effects of swamp drainage. There is special interest in changes that may occur in surface water runoff and changes in quality of water leaving the swamp. If the Bogus Swamp is drained we would appreciate being notified in advance so that instruments could be installed prior to the drainage operations.

Respectfully submitted,
WISCONSIN GEOLOGICAL SURVEY

Perry G. Olcott
Geologist
October 19, 1966



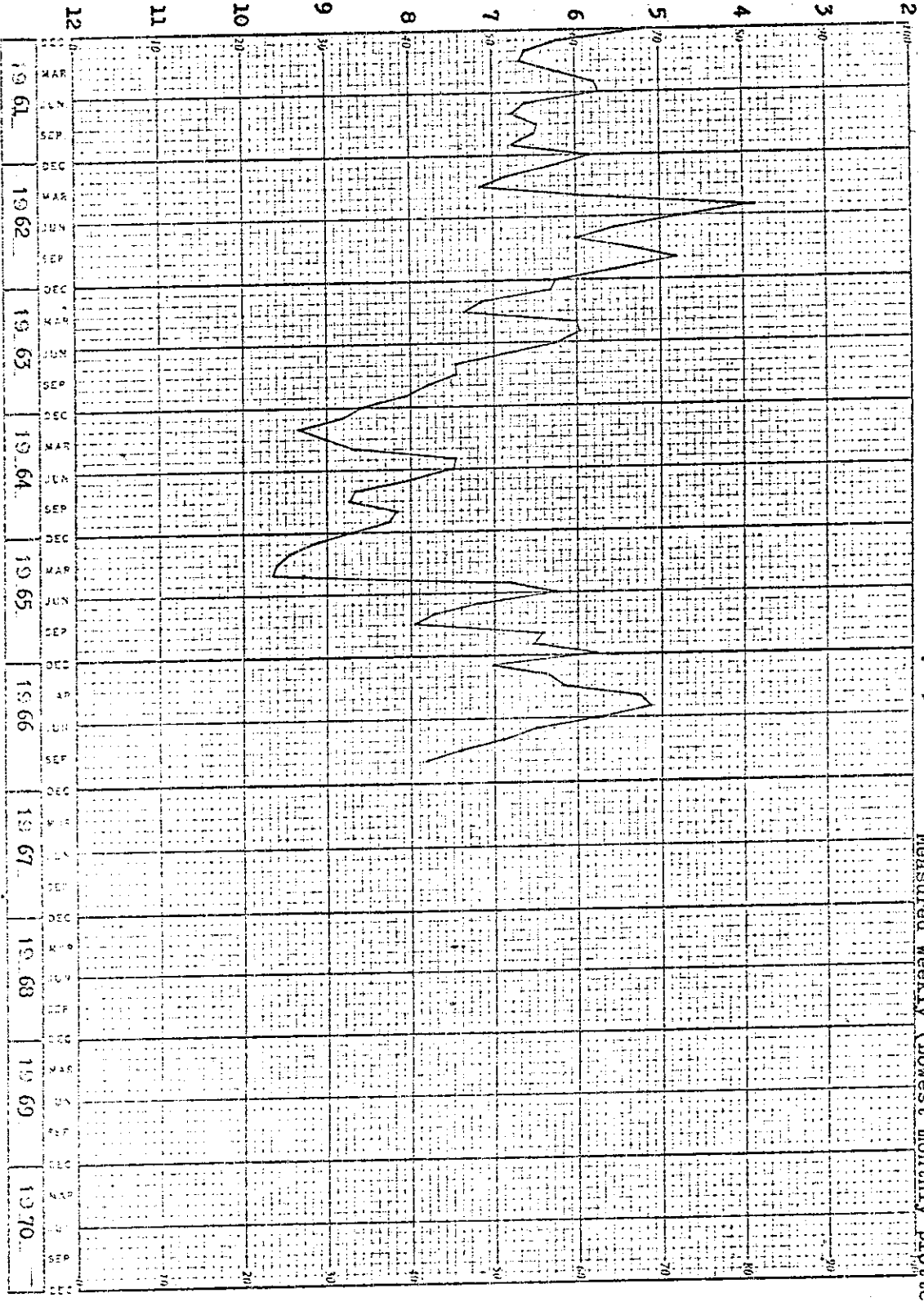
Feet below land surface

STANDARD PAPER CO. NO. CASE. THE YEARS BY MONTHS X 100 DIVISIONS.

GROUND WATER

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La-31/11/7-26. Inauglade Co. U. S. Geol. Survey. SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 7, T. 31 N., R. 11 E. Driven observation water-table well in sand of Pleistocene age, diam 1 $\frac{1}{2}$ in, depth 23 ft, well point 21-23. Isd, 1,521.66 ft above mal. MP, top of collar on casing, 1.00 ft above Isd.



Measured weekly (lowest monthly plotted)