

LAKE DOWN

Orange County Pollution Control Dept.
Biology Section
December, 1979

Lake Down is a 872 acre lake located in the intermediate elevation of southwest Orange County. The lake is landlocked except for a canal on the west shore which connects Lake Down with Wauseon Bay. It is stream fed and drained in the Cypress Creek drainage basin. The lake itself is located at the northeast tip of the Butler chain of lakes.

The majority of the land in the lake's drainage basin has been altered by agriculture (citrus groves). The remaining 20% is used for residential housing.

The shoreline of the lake proper also has been altered extensively; mainly by agriculture and some by residential housing. The land surrounding the lake is well drained soil which facilitates the percolation of stormwater runoff through the soil before it reaches the lake. Once the stormwater reaches the lake the submerged vegetation (i.e. bogmoss, slender hairgrass) also help to assimilate and tie up the excess nutrients, etc. being carried by the stormwater runoff.

With the presence of such impermeable materials as concrete and asphalt used in the construction of roofs, sidewalks, and streets, etc., some of the stormwater will run directly into the lake without the benefit of percolation or assimilation.

The property of well-drained soil, and the presence of shoreline vegetation, and submerged vegetation help to prevent excessive algal growth.

Probable non-point pollution sources would be stormwater runoff from Hwy.439, McGuire Blvd., residential and agricultural runoff. No storm drains were observed entering the lake.

Water quality in Lake Down is very good. Bacteria counts are low, chlorophyll-a counts are low (indicative of little algae growth), and good dissolved oxygen levels exist from the surface to the bottom, and good clarity values (3.2-5.0m). The presence of a certain mayfly nymph which requires 6-7 ppm of oxygen year round also indicate this.

Benthic samples reveal a moderately diverse aquatic life community of mayflies, caddisflies, clams, midges, etc.

Three species of organisms Hexagenia mundo orlando (mayfly), Ablabesymia cinctipes, (a midge); and Polycentropus flavus, (caddisfly) indicate excellent water quality because of noted historical data designating them as pollution intolerant species.

The recreational value of Lake Down for swimming and boating is excellent due to the good water quality and the absence of nuisance weed growth.

The presence of bogmoss and hairgrass provide adequate cover and a habitat for fish and the diverse benthic community provides food. This would create a good fishing environment.

Only two minor fish kills have been reported on Lake Down and no significant complaints have been reported excluding some non-permitted dredging and shoreline alteration which occurred. These incidences were investigated and resolved.

In conclusion, Lake Down has excellent water quality. A sincere effort should be made to preserve and maintain the natural shoreline vegetation. Past experience in this area has shown that stormwater management and preservation of shoreline vegetation is essential, or rapid degradation of water quality will occur. Following these guidelines and those mentioned at

the end of this report can help to preserve Lake Down's water quality, especially since there is ongoing residential development around Lake Down and its surrounding drainage basin.

LAKE SUMMARY

Physical Information

Name Down Station# CC-9 Mid Depth 14*
Surface Acres 872 Lake Type landlocked** Bottom Type muck,sand,Myac
Elevation 98' msl Apparent Color lt. green- Controlled Elevation No
clear
Recreational Quality Excellent

Topography: Lowlands 35 MSL Intermediate 35-105 MSL x
Highlands 105 MSL

Pollution Point Sources

Storm Drains None observed
Industrial Discharges None
Wastewater Treatment Plants None

Non Point Pollution Sources

Remarks: Hwy.439, McGuire Blvd. runoff, agricultural runoff and
residential runoff.

Drainage Basin Land Use

Residential 20 % Industrial 0 % Agricultural 80 % Natural 0 %

Fish Kills Dates: 4/28/70, 5/3/79

Complaints Dates: see attached sheet

Vegetation

<u>Association</u>	<u>Submergent % coverage</u>	<u>Speciation</u>	<u>Shoreline % coverage</u>	<u>Shoreline Development % altered</u>	<u>% natural</u>
<u>Wetland</u>	<u>60</u>	<u>Maidencane</u>	<u>85</u>	<u>15</u>	<u>85</u>
<u>Wetland</u>	<u>30</u>	<u>Cattails</u>	<u>5</u>	<u>--</u>	<u>--</u>
<u>Wetland</u>	<u></u>	<u>Lily pads</u>	<u>2</u>	<u></u>	<u></u>

Remarks: Ongoing residential construction in the area.

* 29' and 28' holes in the lake. ** Canal to Wauseon Bay.

Treatment Program: None

WATER QUALITY DATA SUMMARY

PARAMETER	LOW	HIGH	AVERAGE
pH units	<u>5.4</u>	<u>6.6</u>	<u>6.3*</u>
Alkalinity mg/l	<u>2.0</u>	<u>9.2</u>	<u>3.4</u>
Specific Conductance μ mho	<u>160</u>	<u>300</u>	<u>237</u>
Dissolved Oxygen mg/l	<u>7.1</u>	<u>10.6</u>	<u>8.4</u>
Biochemical Oxygen Demand mg/l	<u>0.0</u>	<u>1.9</u>	<u>0.54</u>
Total Phosphorus mg/l (unfiltered)	<u>< 0.01</u>	<u>0.03</u>	<u>< 0.01</u>
Total Nitrogen mg/l	<u>0.16</u>	<u>0.90</u>	<u>0.51</u>
Turbidity mg/l	<u>0.5</u>	<u>1.6</u>	<u>0.85**</u>
Total Solids mg/l	<u>131</u>	<u>218</u>	<u>162</u>
Calcium mg/l	<u>8.0</u>	<u>14.0</u>	<u>9.5</u>
Potassium mg/l	<u>7.2</u>	<u>9.4</u>	<u>8.5</u>
Magnesium mg/l	<u>7.4</u>	<u>11.0</u>	<u>9.1</u>
Sodium mg/l	<u>11.0</u>	<u>15.0</u>	<u>13.4</u>
Iron mg/l	<u>< 0.05</u>	<u>< 0.10</u>	<u>< 0.053</u>
Toxic Metals mg/l	<u>--</u>	<u>--</u>	<u>--</u>
Chlorophyll a mg/m ³	<u>0.53</u>	<u>4.42</u>	<u>1.75</u>
Dominant Algae Group	<u>Cocoid green</u>		
Fecal Coliforms/100 ml	<u>< 10</u>	<u>< 20</u>	<u>< 15.3</u>
Fecal Streptococci/100 ml	<u>< 10</u>	<u>40</u>	<u>< 15.5</u>

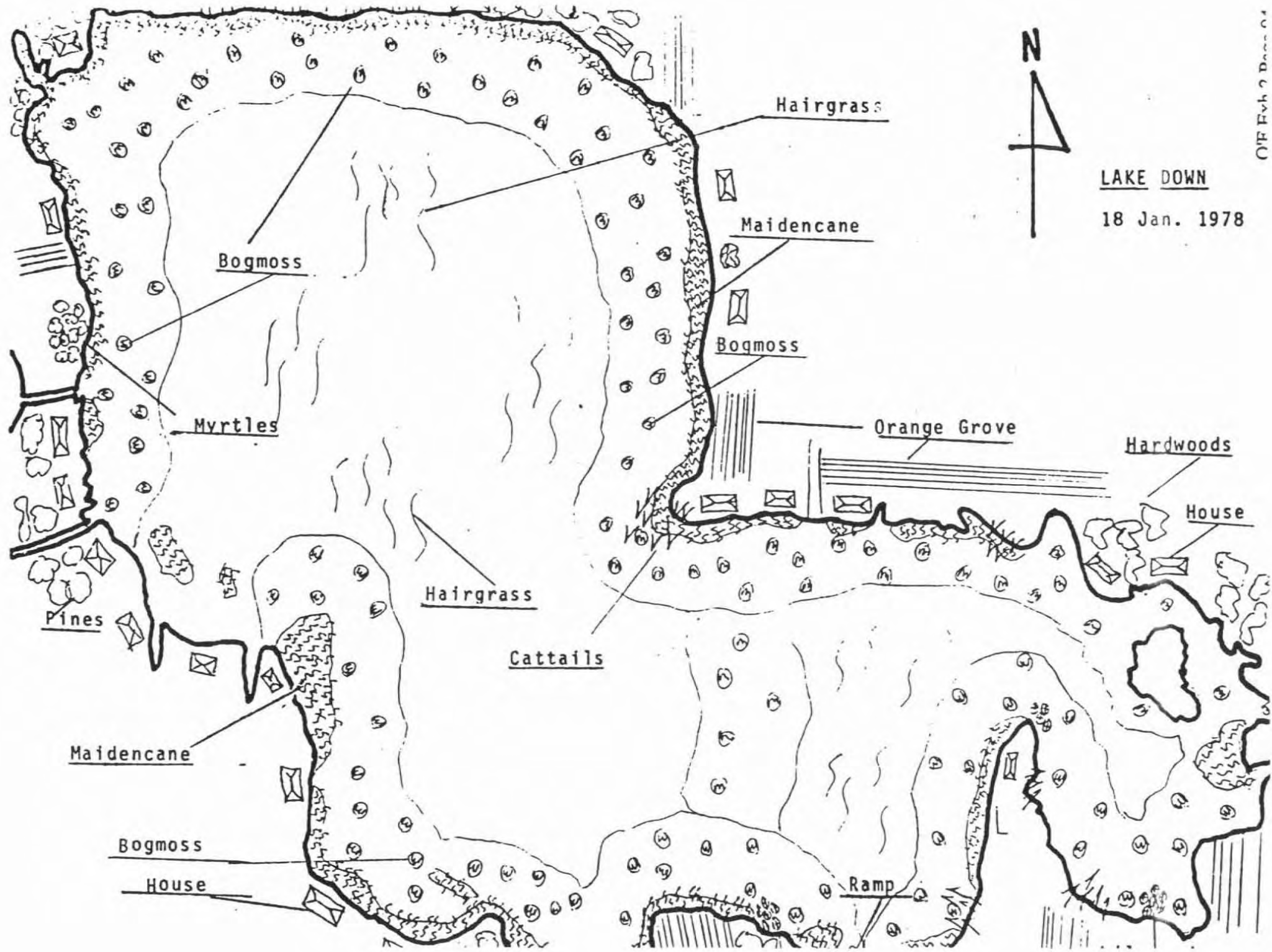
Note: BDL - Below Detection Limits

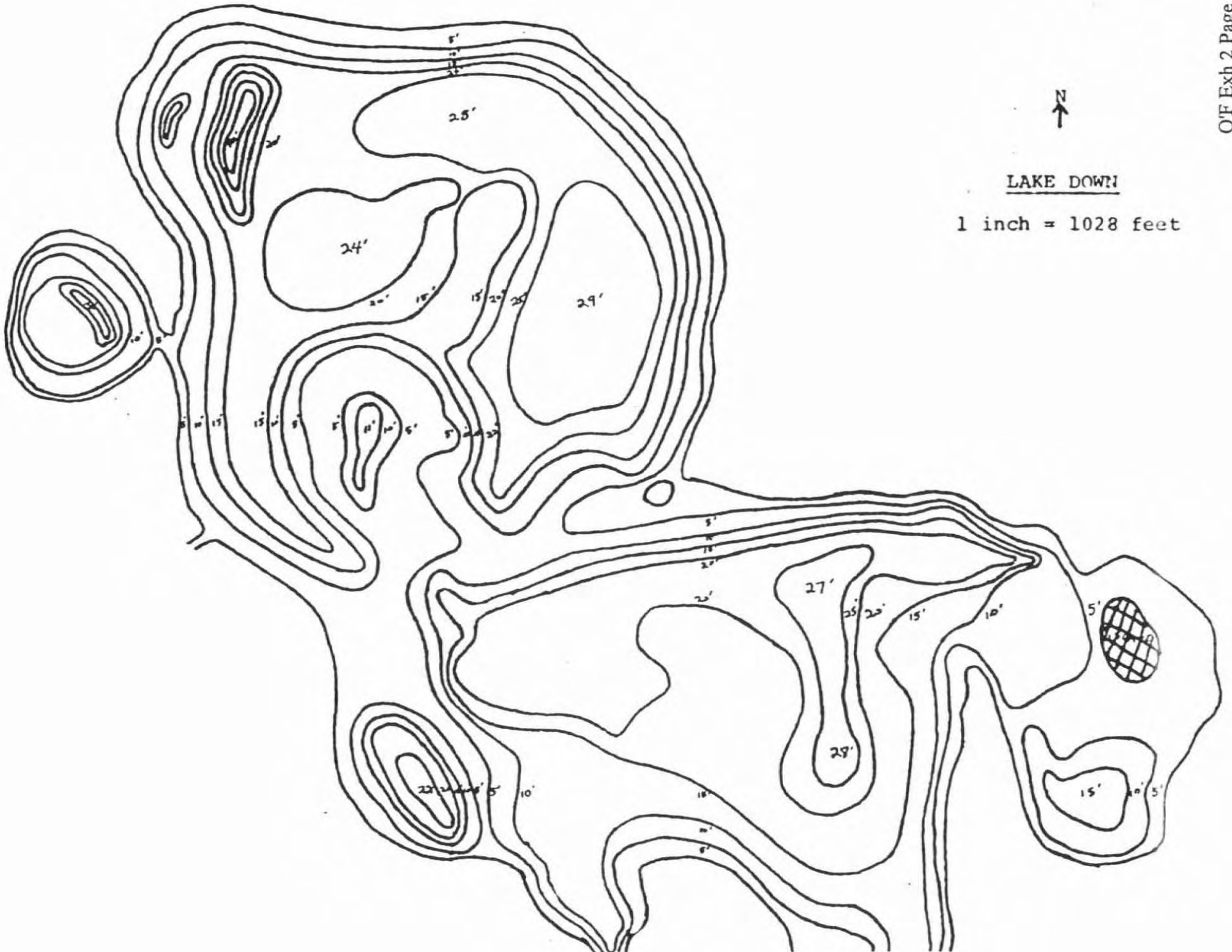
*Most representative value

** Formazin Turbidity Units (F.T.U)



LAKE DOWN
18 Jan. 1978





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1 inch = 1028 feet

