

AGGREGATE RESOURCE EVALUATION OF THE RAKO, BIRCHDALE, AND BIRCHDALE EAST PITS NEAR BAUDETTE, MN

by
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BIRCHDALE AND BIRCHDALE EAST PITS

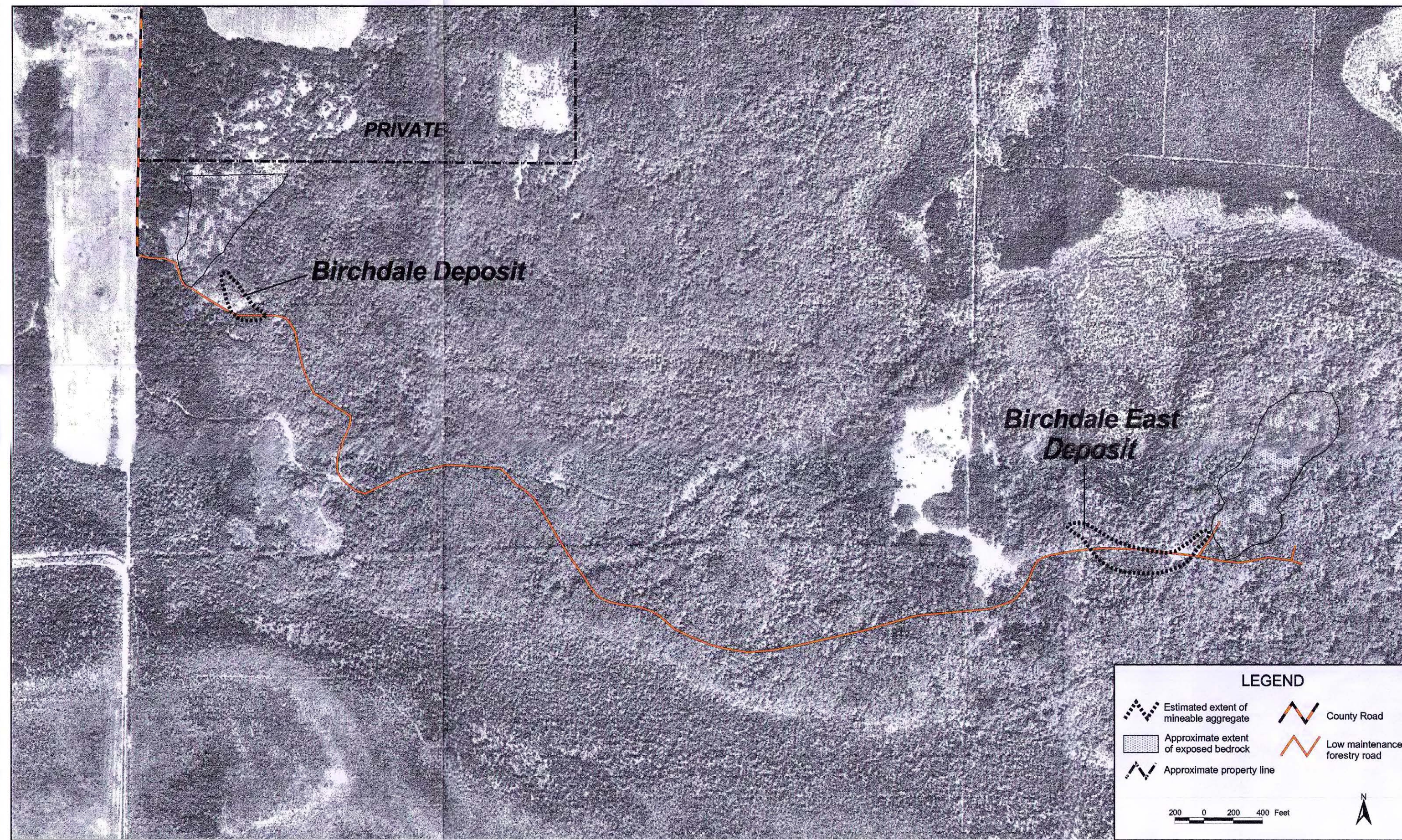
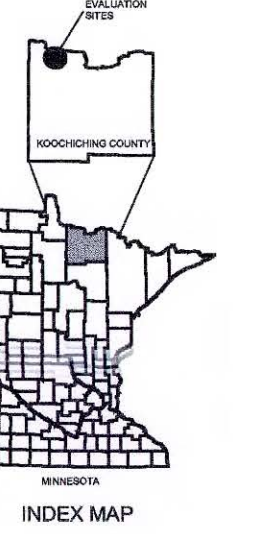


Figure 1. This map shows the locations and estimated extent of the aggregate deposits at the two Birchdale Pits and their position in the landscape. Bedrock knobs are adjacent to each deposit. The background aerial photo was taken in 1991.

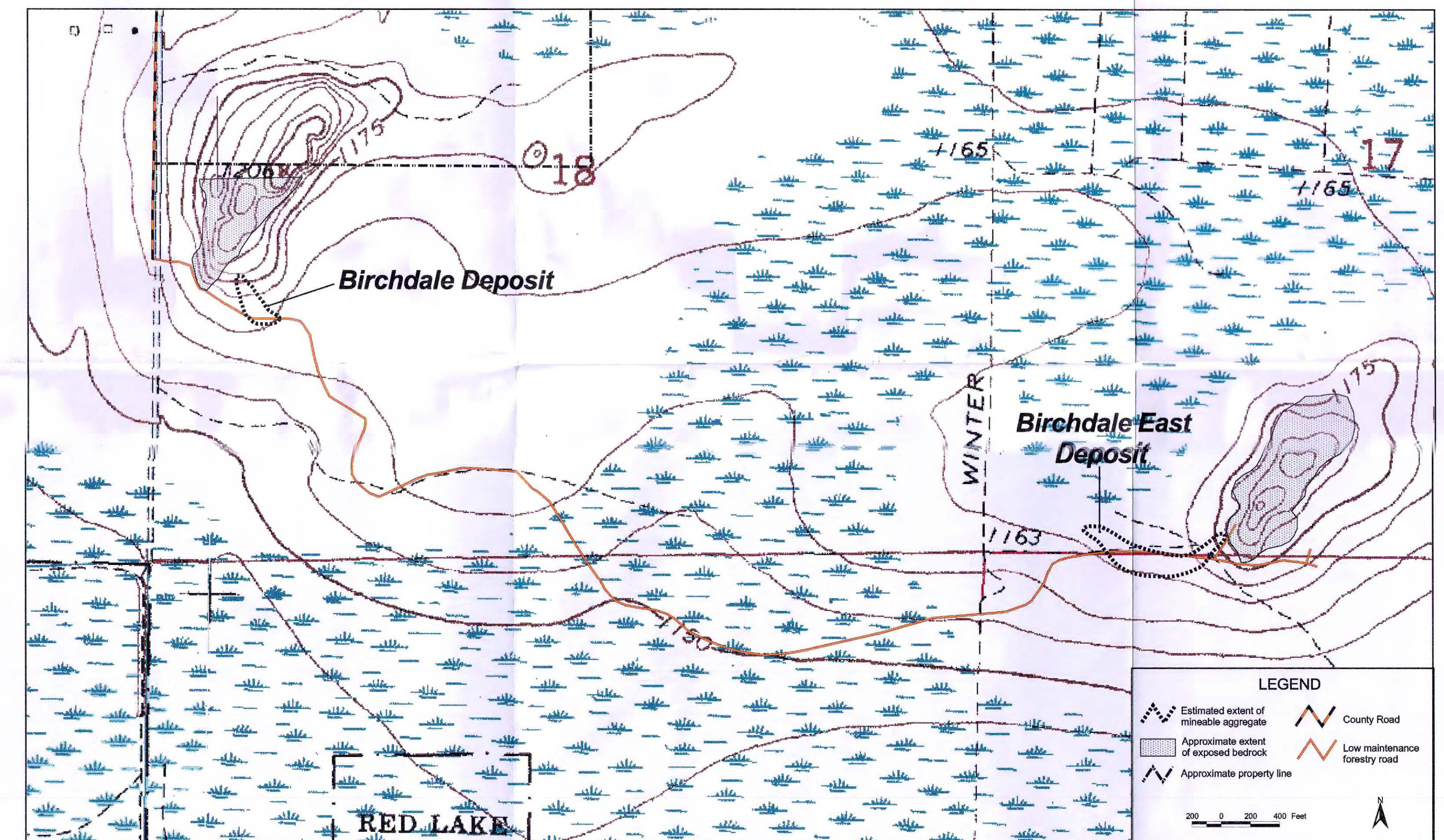


Figure 2. This map covers the same area as Figure 1. The background map is a portion of the US Geological Survey 7.5 minute Birchdale SW, MN quadrangle. The contour interval is 5 feet.

BIRCHDALE SITE

Approximately 7 acres, NW 1/4, SW 1/4, Section 18, T. 159N., R. 27W.

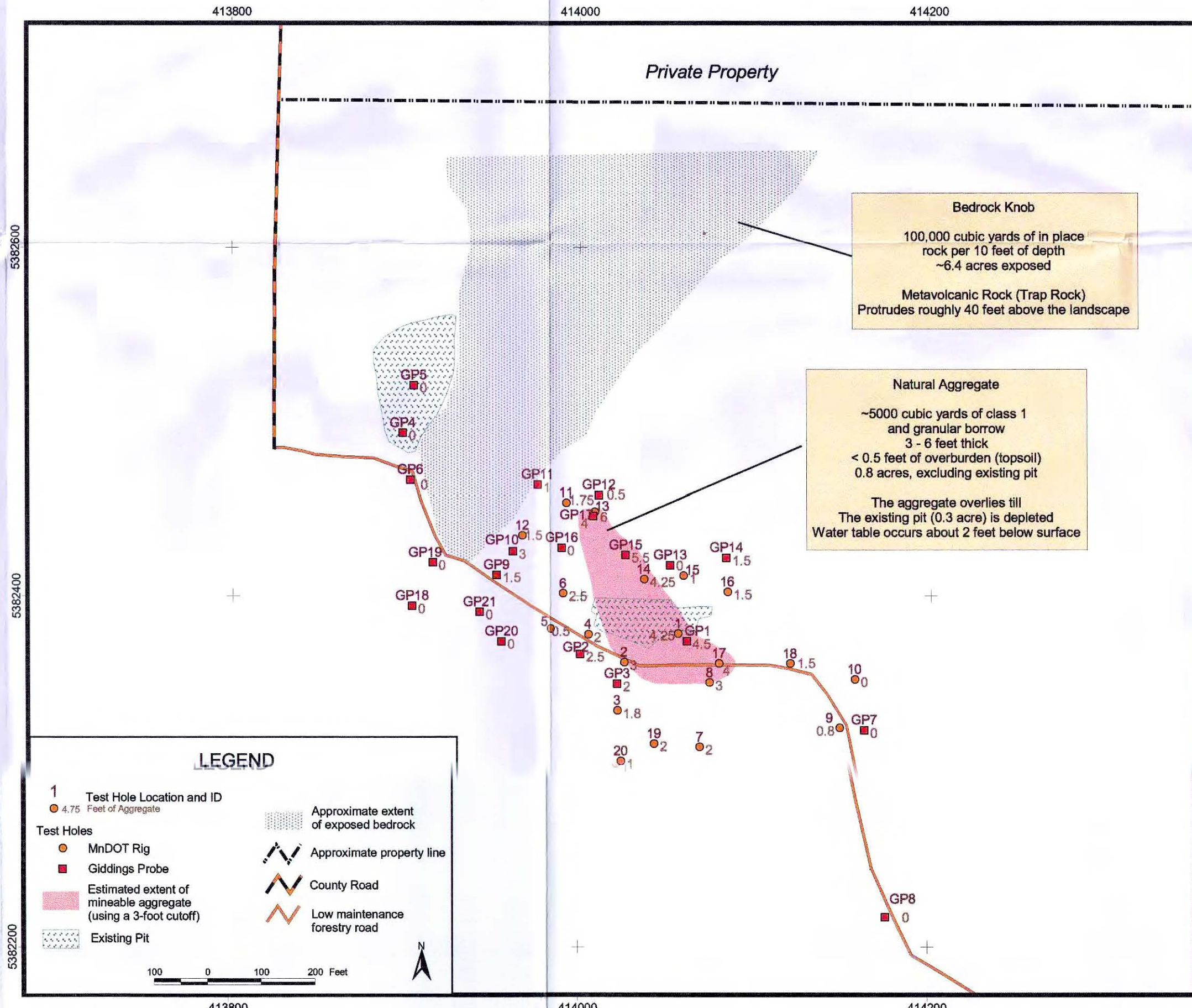


Figure 3. This map shows the estimated extent of the aggregate deposit (using a 3-foot cutoff), existing pits, test holes, and exposed bedrock at the Birchdale Pit. A small amount of aggregate remains. The portion north of the existing pit could make class 1. The portion south of the pit is suitable for granular borrow. No aggregate remains in the existing pits. The easternmost pit contains 1 - 2 feet of water. Map coordinates along the perimeter are UTM NAD 83.

BIRCHDALE EAST SITE

Approximately 15 acres, S 1/2, SW 1/4, Section 17 and N 1/2, NW 1/4, Section 20, T. 159N., R. 27W.

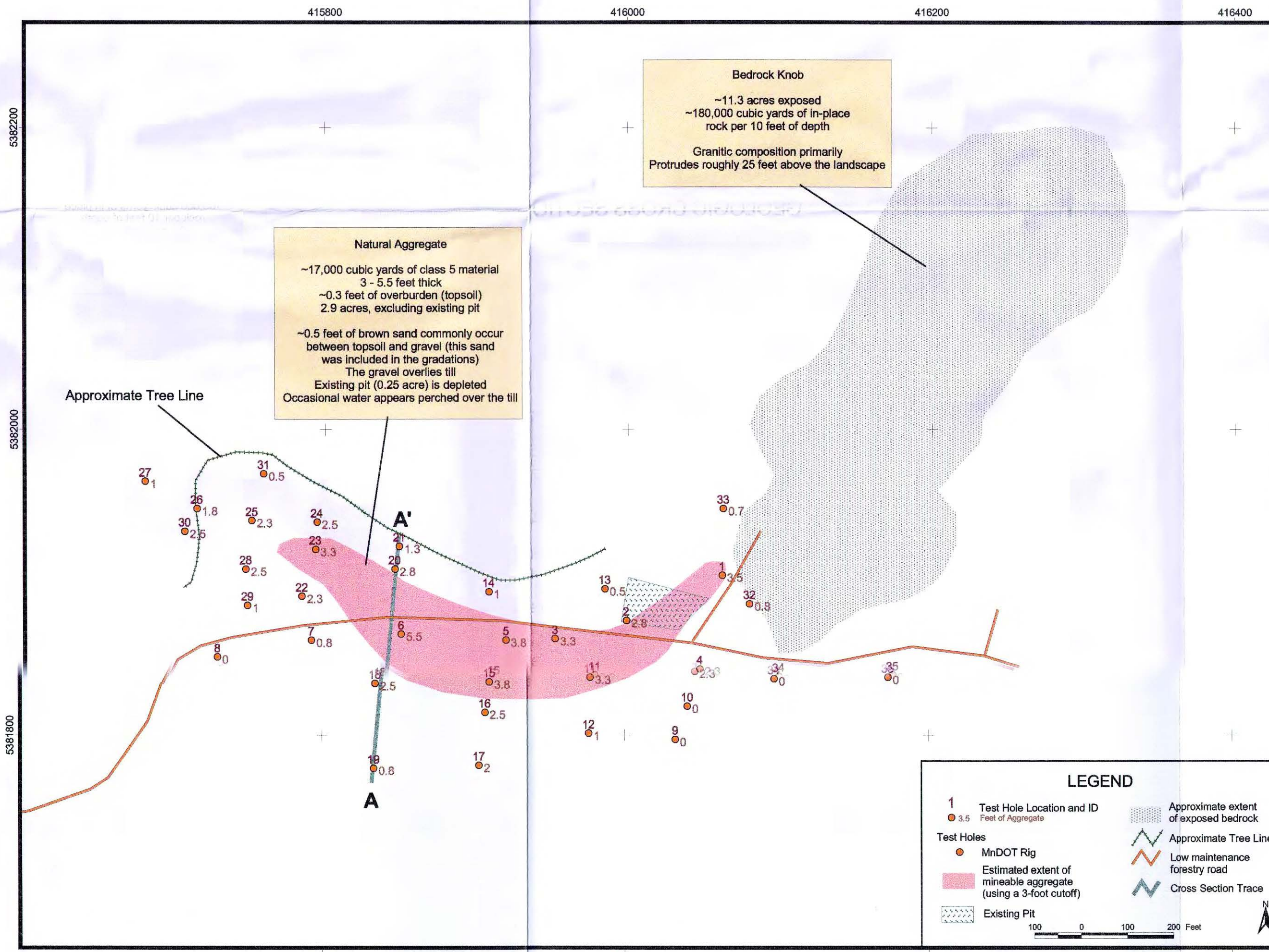


Figure 4. This map shows the estimated extent of the aggregate deposit (using a 3-foot cutoff), existing pits, test holes, and exposed bedrock associated with the Birchdale East Pit. The deposit occurs as an elongated lens overlying till. About 17,000 cubic yards of aggregate suitable for class 5 remains on site. No aggregate remains in the existing pit. Map coordinates along the perimeter are UTM NAD 83.

GEOLOGIC CROSS SECTION OF BIRCHDALE EAST DEPOSIT A - A' (Looking West)

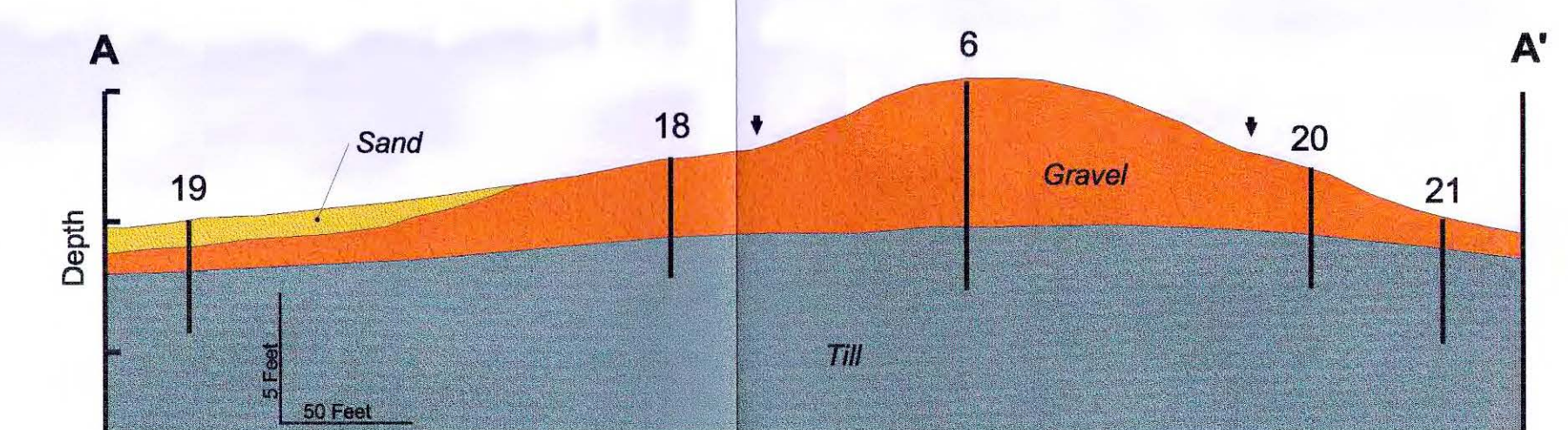


Figure 5. Geologic cross section of the Birchdale East deposit. The gravel deposit occurs as a lens lying upon till. The deposit thins along its flanks, becomes sandier, and gradually changes to a thin sand or gravelly sand. The 3- to 4-inch layer of topsoil that occurs throughout the site is not shown on this figure. The numbered vertical lines represent test holes. Arrows mark the extent of the deposit recommended for mining. Inside these arrows the deposit is greater than 3 feet thick. Outside the arrows, the gravel gradually thins and becomes more sandy. Elevations were not surveyed, so the relative elevations from one hole to the next are estimated and interpretive. See Figure 4 for the location of this cross section. A cross section of the Birchdale deposit would be comparable to this one. Vertical exaggeration is 10 times.