GEOLOGIC SUMMARY OF THE GLACIAL HISTORY OF MCCARTHY BEACH STATE PARK

A BRIEF OVERVIEW OF THE GLACIAL GEOLOGY

McCarthy Beach State Park is located on a large landform deposited as the Rainy Lobe stagnated at an ice position approximately 13,500 years before present (Flint, 1971). The resulting stagnation landform is a 2 km wide, 8 km long, linear feature that trends northwest-southeast. The landform is broad, somewhat flat, with a parallel trending trough-like depression. The landform is made mostly of sand and gravel, and well-sorted, fine sand. Previous investigations of the region have mapped similar ridges to the northwest as kame terraces and ice contact features (Eng, 1968 and Meyer, 1993; respectively).

A kame terrace forms between melting glacial ice and another large block of mass. For valley glaciers, kame terraces form between ice and the mountain valley wall. For continental glaciers, it is usually an ice-to-ice contact. Resulting features are kettle lakes bounded by steep walls, collapsed topography, and deposition of sorted sediment.

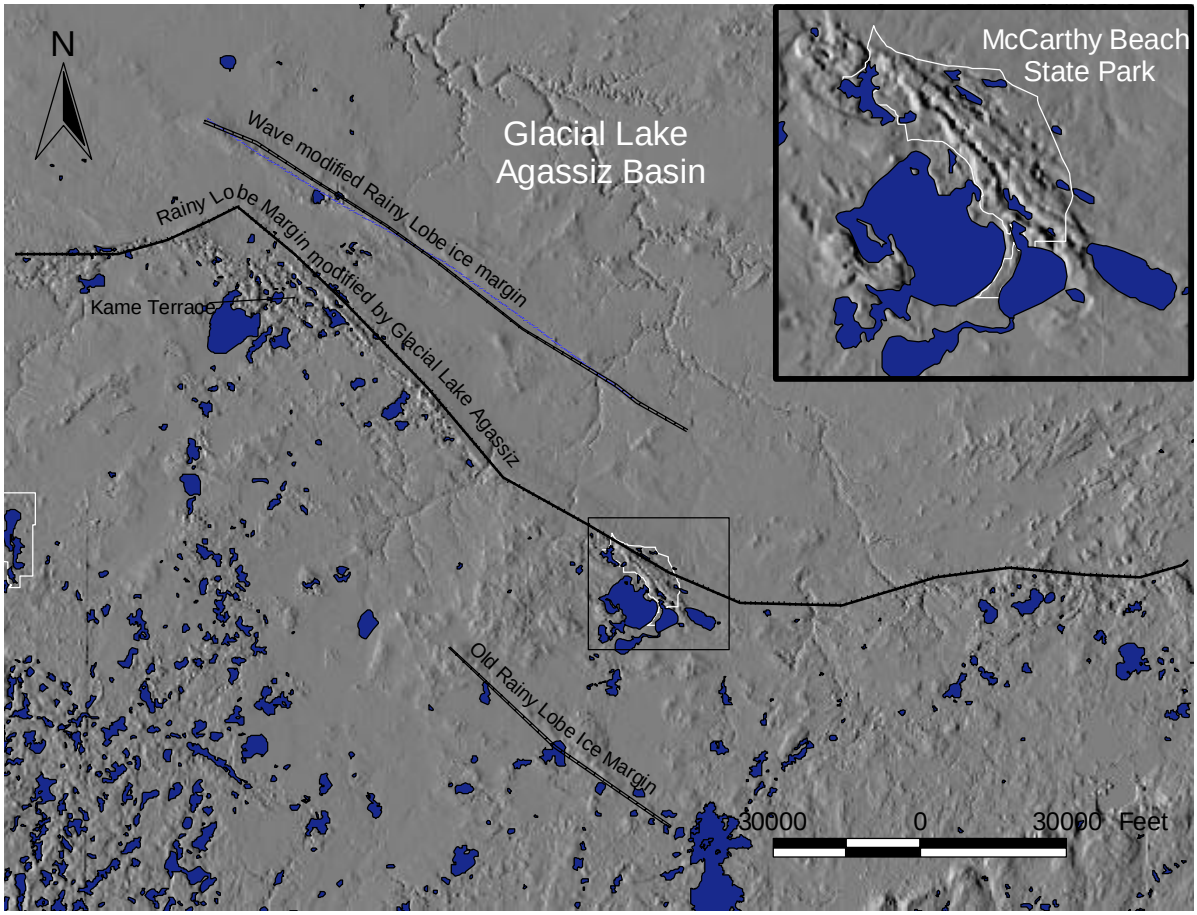

Figure 1. Regional view of Rainy Lobe ice margins.

Figure 3. Former lake levels.

slopes were interpreted as a second lake level. Within the park, an abandoned channel crossed the current isthmus and linked Sturgeon and Side Lake together.

One lower lake level may have existed approximately at 1360 feet (Figure 3). This is roughly 10 feet lower than modern water levels. There are two landforms that suggest a lower lake level: a bench within the lake that drops off past 10 feet and a large dune that spans the Sturgeon Lake side of the isthmus. The bench can be seen in the bathymetry of both Side and Sturgeon Lake. The bench is marked by a shallow gradation from the shore until approximately 10 feet deep, then a sharp slope. Small dunes are found throughout the isthmas. Most of them are to small to be seen on a 1:24,000 scale. However, a lip of coalesced dunes can be seen on the western edge of the isthmus paralleling the beach of Sturgeon Lake. This dune is large enough to be mapped on a 1:24,000 scale. The size of the dune and its proximity to the lake suggests that there must have been a larger beach or a larger sediment source to have created such dunes.

RESEARCH METHODOLOGY

Field work was completed in the weeks of September 6th - 17th, 1999. In that time, 10 auger holes were dug and described, 6 gravel pits were mapped and described, and 3 roadcuts were observed. In addition, notes on the general geomorphology were taken as well as old channel scarps. The listed sites were mapped on 1:24,000 scale using the USGS 7.5' topographic map (Quad, Side Lake). Landforms and geomorphic features were also delineated on 1:16,000 scale black and white aerial photographs (1981).

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