During the glaciations (1 million to 12,600 years ago), Lake Erie was gouged out by mile-thick sheets of ice.

Lake Erie is the shallowest Great Lake because the glacial ice was relatively thin and lacked significant erosive power when it reached so far south.

As glaciers advanced and retreated from Ohio, they left deposits. Certain deposits are of economic importance, particularly clay, peat, sand and gravel.

The oldest rocks underlying present day Lake Erie and the watershed originated about 400 million years ago during the time when salt water covered the basin. Evidence of the ocean is found deep below the surface of the lakebed in limestone and salt deposits.

Salt mines offshore of Cleveland and Fairport Harbor are nearly 2,000 feet below the bed of Lake Erie. On average, more than 4 million tons of salt (Halite, NaCl) are mined annually making Ohio one of the top salt producing states in the nation. At current mining rates, this underground salt supply will last thousands of years.

Lake Erie in its present form is less than 4,000 years old.

Lake levels fluctuated during Erie’s formation due to glacial configuration and melting, the depression of the land by the weight of glacial ice and the slow rise of the earth (isostatic rebound) after the ice retreated.

During formation, Lake Erie had numerous lake-level stages, some of which were up to 230 feet higher than modern Lake Erie. Evidence of the stages is found many miles inland as beach ridges, which historically were used as transportation routes.

Lake Erie water levels continue to fluctuate based on the amount of precipitation, ice cover, snow melt and evaporation rates in the Great Lakes watershed.

Lake levels recorded during the last 150 years show daily, seasonal, yearly and multi-year level changes and patterns.

Lake level changes, wave action and human development influence the shape of the coast through erosion and accretion.

Lake levels can affect erosion rates. Erosion is the wearing away of rock, soil, sand and other earth materials. It occurs as wind, waves and currents move sediments.

The type of soil along the shore will affect erosion rates. Limestone and dolomite (found more in the Western Basin) are more resistant to erosion than shales (found in the Central and Eastern basins).