Flax Pond: A Historical Perspective of Geomorphic Development

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Introduction

Documentation in the form of aerial photography, historical maps, satellite imagery, and literature may be used to provide a historical geomorphic survey of an area. The effects of natural and anthropogenic occurrences at Flax Pond, located approximately sixty miles east of New York in the north shore incorporated village of Old Field, New York, can be interpreted and supported by various forms of historical documentation.

Figure 1: *Satellite of Long Island, 1997 (NASA, 1999)*

The geomorphology of Flax Pond in the past two hundred years has most notably changed due to the human construction of an inlet in 1803 and later the addition of concrete jetties in 1942. The overall geomorphic evolution is a result of the interrelationships between these man-made structures and the existing long shore currents of Long

Island Sound.

Discussion

During colonial times settlers used the pond as a location to "ret" flax, a staple of life in early America. Many bundles of flax stalks were submerged in the pond for up to two weeks, where they would then dry in the open air. This practice continued until 1803, when an inlet was dug by the Town of Brookhaven; the inlet allowed the introduction of salt water from Long Island Sound, and also created commercial oystering and claming in the pond. (Klein, 1986)

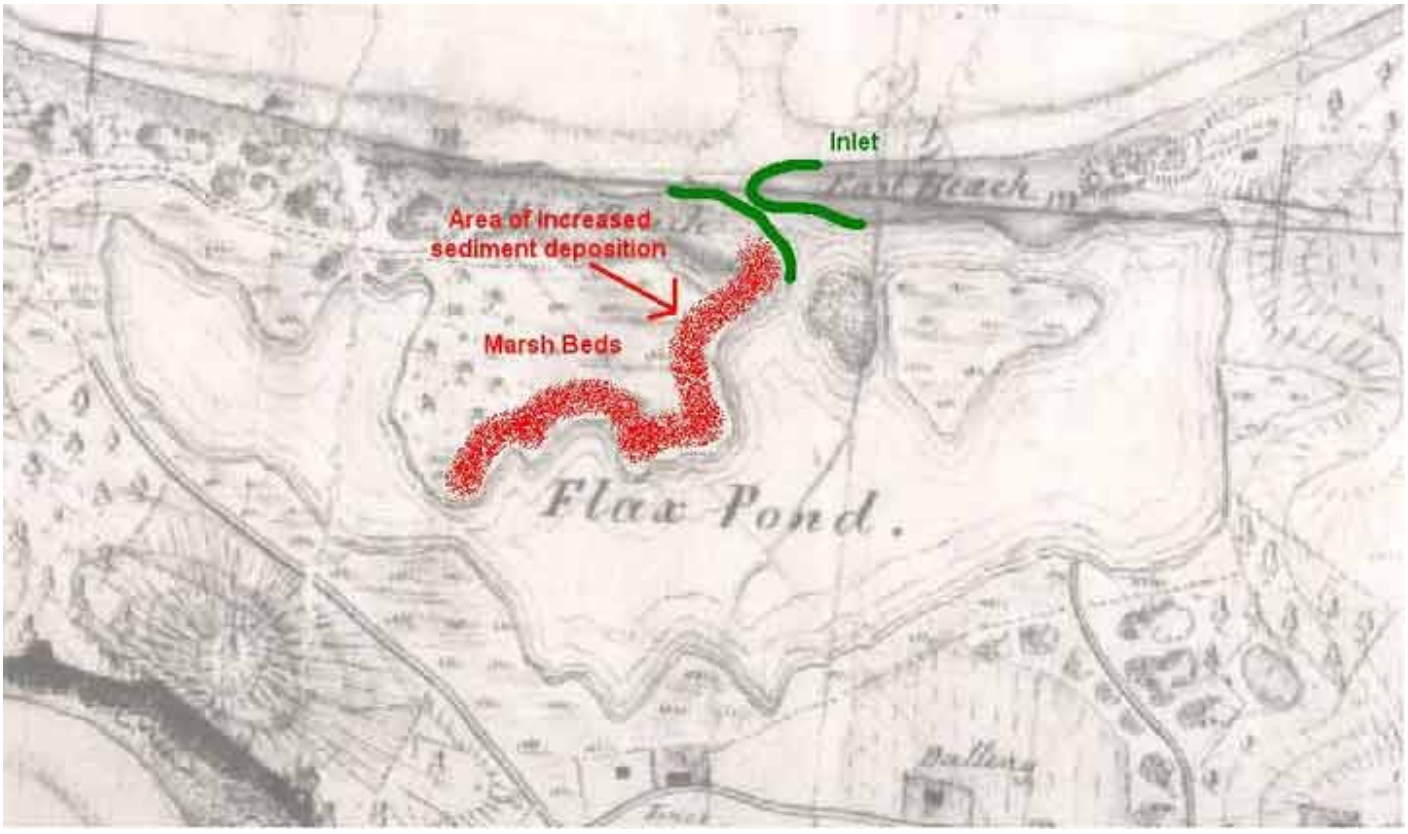

Figure 2: *Map of Flax Pond, 1837 (USDA, 1837)*

The establishment of the inlet introduced the salt waters of Long Island Sound into the fresh water pond. The inlet also formed water currents in the pond, increasing the amount and rate of sediment deposition and transport. As salt water entered the pond through the inlet, sediment was deposited on the eastern region of the marsh beds, where the current was of low energy, leading to the increased size in the marshes.

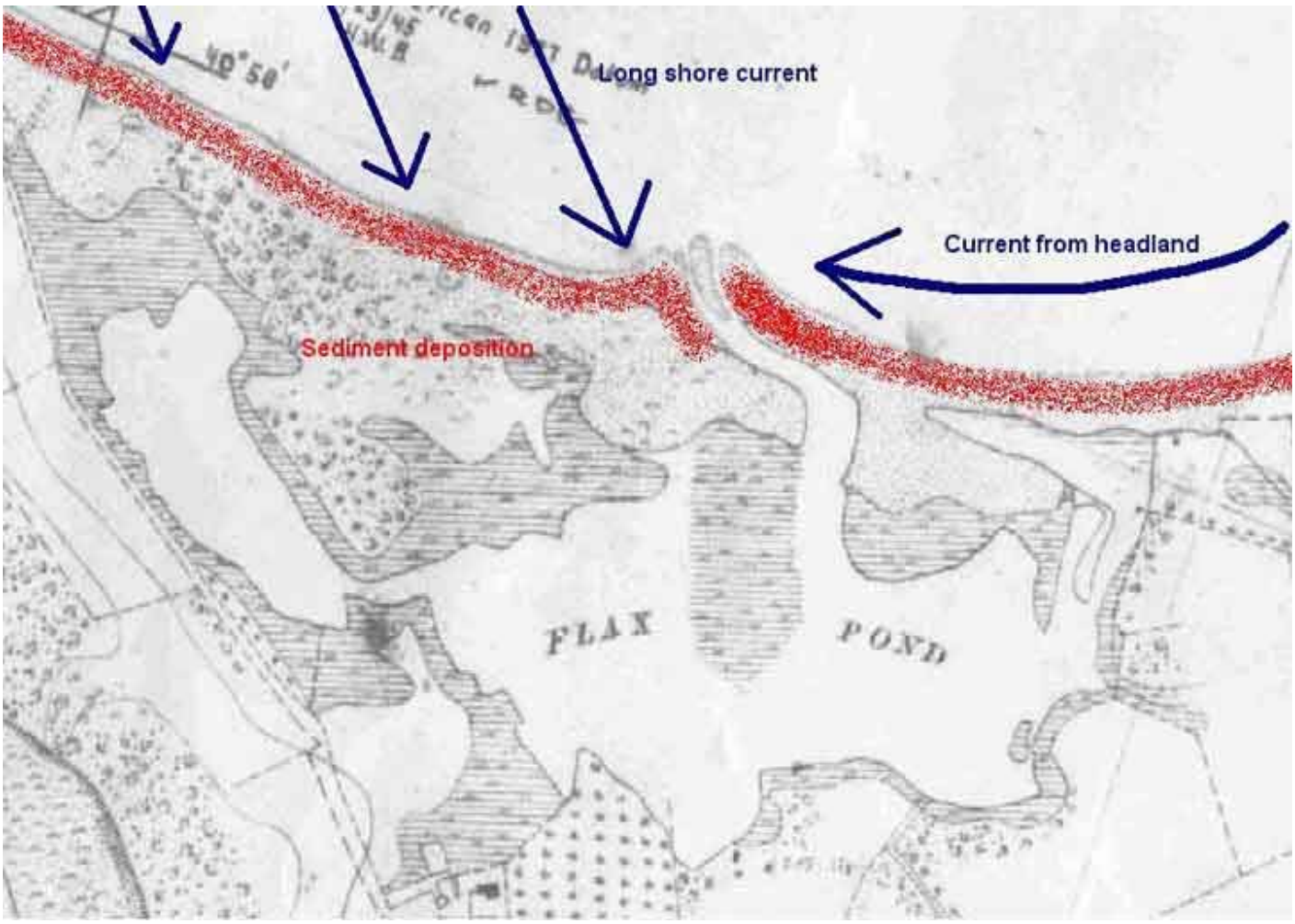

Figure 3: *Flax Pond, 1885 (USDA, 1885)*

The dominant long-shore currents of the sound led to the formation of bay mouth bars on each side of the inlet. These currents brought along sediment, depositing it when hitting the mainland. The currents traveled from the northwest and led to the development of a bay mouth bar at the western opening of the inlet. The minor currents also deflected off the headland to the east of the pond and formed a new northeast current, leading to the development of the eastern bay mouth bar.

Sediment deposited around the inlet had built up substantially by 1885. This is evident by the apparent narrowing of the width of the inlet and terrestrial build-up on the gravel shore.

Figure 4: *Flax Pond, 1938 (USDA, 1938)*

Despite efforts to keep the inlet straight and open to the sound, sediment deposition continued into the twentieth century, changing the shape and size of the inlet. As the bay mouth bars began to develop, currents from the interior region of the pond caused the eastern bar to curve northwards and the western bar southwards. This changing orientation of the bay mouth bars altered the location, size and shape of the inlet dramatically.

A change in water current in the pond may have caused erosion at the eastern region of the marsh bed, where it had originally caused deposition.

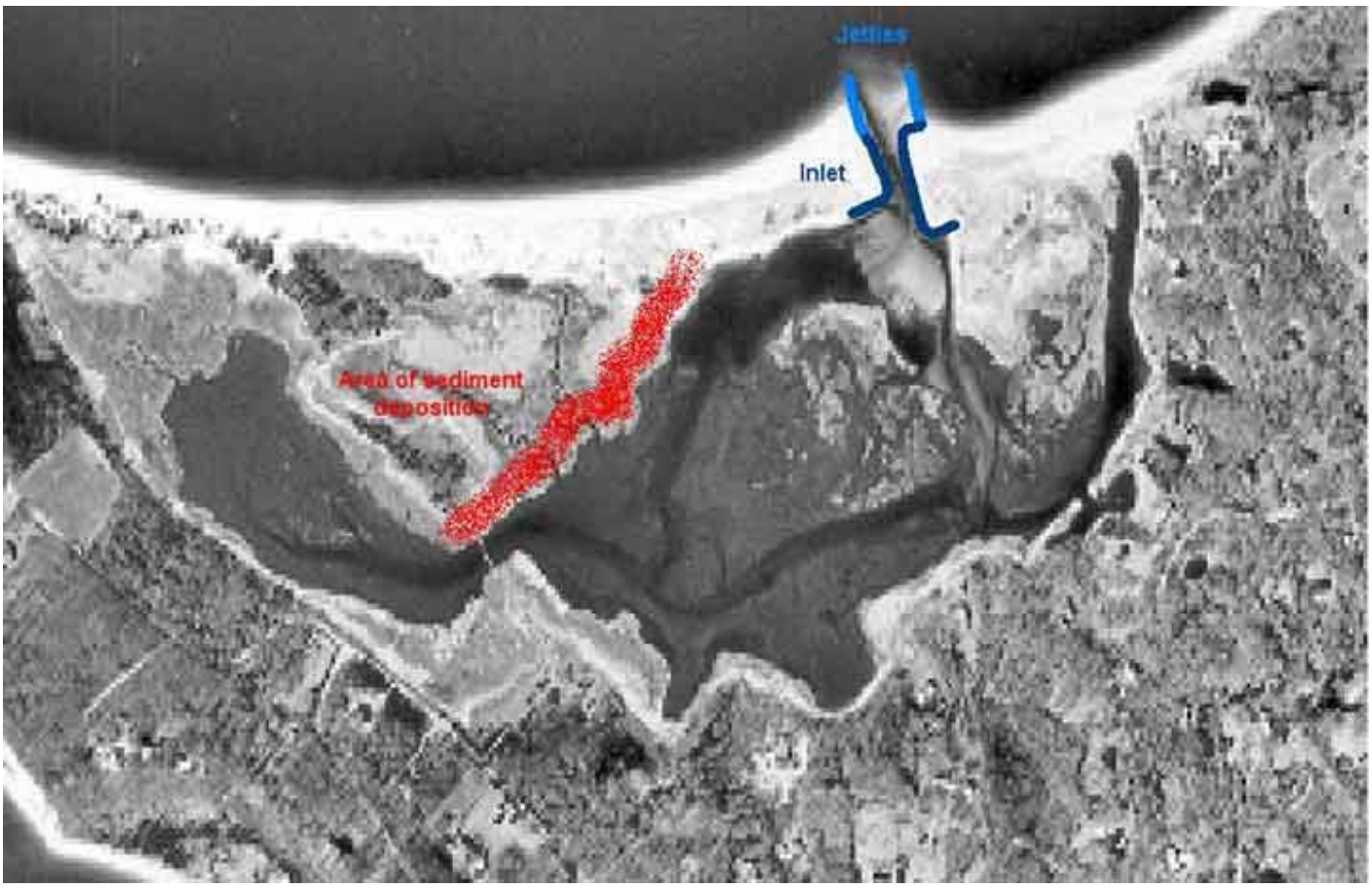

Figure 5: *Flax Pond, 1988 (Lockwood, Kessler & Bartlett, 1988)*

In 1942, before this photograph was taken, concrete jetties were erected on both sides of the inlet, which was dredged once again. These jetties provided a more stable size, shape and location of the inlet. This anthropogenic event most likely have led to the reestablishment of an earlier water current direction. As seen in the nineteenth century, sediment was deposited on the eastern region of the marsh beds.

Since the creation of the new inlet and jetties the geomorphology of the pond has remained relatively stable.

Further Investigation.... A Work in Progress

Future research may investigate the relative ages of vegetation found in the area and the correlation of this data to the changing direction of interior water currents, as inferred by sediment deposition seen on aerial photography, etc. A closer look at these and other factors, such as storm events, will further explain the geomorphic development of Flax Pond.

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