

# A History of Development Within Lake Mattamuskeet and Surrounding Watershed

1800s Watershed Boundary

Drainage District 1 Influenced Watershed Boundary

360-1584-	Inputs of organic matter into the lake from the surrounding catchment is extremely limited leaving Lake Mattamuskeet with clear water, a sandy lakebed and few nutrients to support aquatic plant growth. <sup>6</sup>
1773-	Lake Mattamuskeet covers 110,000 acres and is 6-9' deep. An attempt by the Provincial Congress to dig a canal to Pamlico Sound fails, along with another attempt by an appointed drainage board in 1789. <sup>2,3</sup>
1825-	The NC legislature gifts ownership of the lake to the State Literary Board with the expectation they will improve and sell the surrounding lands to support public education. <sup>2,3</sup>
Late 1830's-	The State Literary Board assigns \$200,000 (\$4.5 million today) to the construction of canals to drain Mattamuskeet, Pungo and New Lakes. <sup>3</sup>
1838-	Lake Landing Drainage Canal is dug by hand approximately 10-15' deep and 15-25' wide extending 7 miles from Lake Mattamuskeet to Pamlico Sound at Wysocking Bay. When complete, drainage to the sound reduces the lake from 110,000 to 55,000 acres. <sup>2,3</sup>
1849-	Fairfield Canal is dug north to the Alligator River, providing drainage and transportation for the city of Fairfield. <sup>3</sup>
<b>1860-</b>	<b>Heightened European settlement and land alterations dramatically increase organic matter input to the lake. These nutrients support the growth of phytoplankton within the lake over the following decades. <sup>3,4,6</sup></b>
1909-	NC Public Law 509 is passed authorizing the State Board of Education and around 550 Hyde County landowners to establish the Mattamuskeet Drainage District. The district is overseen by a Board of Commissioners to drain the lake and provide additional drainage for approximately 50,000 acres of surrounding private owned farmland. <sup>2,3</sup>
1911-	Lake Mattamuskeet is sold to the Southern Land Reclamation Company (SLRC) who layout a plan to subdivide the lakebed into commercial and residential properties and develop a town. <sup>3</sup>
1913-	The Board of Commissioners drafts a drainage plan and hires A.V. Wills & Sons to construct Outfall Canal, 76 miles of canals interior to the lake and a pumping plant. <sup>2,3</sup>
1914-	Outfall Canal is constructed via mechanical dredge at 7 miles long, 60' wide at the base and 70' wide at the top. <sup>2,3</sup>
1916-	A steam powered pumping station is built at the north end of Outfall Canal. The SLRC, now called New Holland Farms, Inc., reclaims around 20,000 acres of the lakebed and develops the town of New Holland. <sup>2,3</sup>
1918-	Due to financial strain and pump failures, the real estate project is sold to North Carolina Farms who encounter the same problems after draining the lake in 1920. <sup>3</sup>
1919-	Construction on the revised 1913 drainage plan is completed, resulting in 130 miles of canals along the lakebed. <sup>2</sup>
1920-1923-	Roads in New Holland are laid out and graded. By 1923, 125 people live in the town of New Holland. <sup>2</sup>
1921-	The 35-mile New Holland, Higginsport and Mt. Vernon Railroad extending from Wenona in Washington County to the pumping plant at New Holland opens its doors to passengers. <sup>2</sup>
1923-	The state acquires NC Farms and the Mattamuskeet Drainage District after the company declares bankruptcy and the district is unable to collect drainage tax and continue operations. The pumping plant is shut down. <sup>2</sup>
1926-	The project is purchased by New Holland Corporation who abandon the earlier plan of selling parcels of the lakebed as real estate and instead pump the lake and transition the lakebed into a large commercial farm. <sup>2</sup>
<b>1928-</b>	<b>Construction of the Alligator/Pungo cut of the Atlantic Intracoastal Waterway (AIWW) is completed</b> raising issues of flooding and saltwater intrusion around Fairfield. <sup>2,5,10</sup>
1930-	Lateral canals along the lakebed are now excavated using ditching machines instead of day laborers. <sup>2</sup>
1933-	The latest farming project is abandoned. As water levels rise, large-mouth bass, black crappie and white perch enter the lake from surrounding canals when gates open in winter, creating sportfishing opportunities within the lake. <sup>3</sup>

- 1934- **Lake Mattamuskeet Migratory Waterfowl Refuge is formed** when the Government purchases 49,925 acres from New Holland Corporation. Owners within the original boundary of the Mattamuskeet Drainage District retain the right to drain into the lake. Despite turbid water conditions, refuge managers begin transplanting submerged aquatic vegetation (SAV) along the lakebed to improve habitat for migratory birds.<sup>4, 7, 11</sup>
- 1937- Waupoppin Canal is constructed via mechanical dredge, improving flow to Pamlico Sound and lowering lake levels. Sport fishing declines as fish populations shift from large-mouth bass and crappie to perch and carp.<sup>1, 3, 4</sup>
- 1940-1949- The refuge initiates a carp removal program to improve water clarity and support fish diversity. Local fishermen are employed by the refuge to use pound or fyke nets. No net reduction in population is measured.<sup>1</sup>
- 1942- **NC Highway 94 is completed dividing the lake into two basins.**<sup>4</sup>
- 1948- The Corps of Engineers reviews saltwater intrusion and flooding issues associated with the AIWW. The review finds the AIWW is not solely responsible, but recommends corrective works be provided to Fairfield at federal expense.<sup>10</sup>
- 1949- Around 100,000 striped bass fingerlings from Weldon Hatchery are distributed within Lake Mattamuskeet.<sup>12</sup>
- 1949-1952- Drag seines used for carp removal combined with a series of lake drawdowns during the summer, which occurred naturally via gravity flow once flashboards were pulled, increases biomass of carp removed. Over 1.6 million pounds of carp and 1 million pounds of catfish are removed from the lake and surrounding canals. Rose Bay Canal is constructed via mechanical dredge in 1950.<sup>1, 3, 6, 11</sup>
- 1951-1952- Carp and catfish removal improves water clarity and 15,000 acres of SAV volunteer along the lakebed. Emergent vegetation attractive to waterfowl expands along the shoreline.<sup>1, 4</sup>
- 1955- The Civil Works Appropriation Bill authorizes funding for the construction of a pumping plant and dam with control gates on Fairfield Canal near the Intracoastal Waterway.<sup>10</sup>
- 1958- Fairfield Drainage District is established to prevent saltwater intrusion and flooding from the AIWW.<sup>10</sup>
- 1960- Phytoplankton remain dominant within the west basin of the lake while macrophytes, such as SAV, dominate the east basin. Lake grasses are now considered an important part of the lake Mattamuskeet ecosystem.<sup>4, 11</sup>
- 1980- **Water quality parameters associated with eutrophication are measured within the lake.** These parameters include chlorophyll *a*, total phosphorous and nitrogen, total suspended solids, turbidity and pH.<sup>4</sup>
- Mid 1990's- SAV loss begins within deep regions of the west basin.<sup>4</sup>
- 1998-2003- Large expanses of lakebed are exposed due to extended drought. In 2003, substantial rainfall increases lake levels.<sup>11</sup>
- 2002- Samples of chlorophyll *a* and pH exceed state guidelines for the first time since sampling began in 1981.<sup>4</sup>
- 2008- An extensive fish kill occurs within the lake due to algal blooms resulting in low levels of dissolved oxygen.<sup>SOURCE</sup>
- 2012- The refuge initiates a water quality monitoring program in collaboration with NCDWR and USGS. Real time monitoring stations across the lake measure water level, clarity, dissolved oxygen, pH, temperature, salinity and conductivity. Monthly during the growing season, grab samples are analyzed for chlorophyll *a*, nutrients and suspended solids and occasional testing of pesticides and cyanotoxins begins.<sup>4, 9, 11</sup>
- 2012-2015- 68% of chlorophyll *a* and 32% of daily median pH samples exceed state guidelines; turbidity samples exceed state guidelines for the first time.<sup>4</sup>
- 2013-2014- SAV loss begins within deep regions of the east basin following a sharp decline in water quality due to increased suspended sediments, nutrients and phytoplankton.<sup>4</sup>
- 2014- The USFWS and NCWRC form the Mattamuskeet Collaboration Team, tasked with establishing goals and actions to address the conservation challenges of the reserve and Lake Mattamuskeet. The Mattamuskeet Technical Working Group, consisting of scientists from both agencies, is formed and tasked with identifying approaches to improving lake water quality.<sup>11</sup>
- 2016- **The lake is listed as an EPA 303(d) Impaired Water due to elevated pH and chlorophyll *a* levels.**<sup>4, 8</sup>
- 2017- USFWS, NCWRC, and Hyde County fund the development of a Mattamuskeet Watershed Restoration Plan. Monitoring results suggest no significant difference in water quality between the two basins as previously reported and surveys conducted by the USFWS indicate that all SAV is effectively gone from both basins.<sup>4, 6, 11</sup>

## References:

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