

A Review of Sedimentation within the Marion County Park and Lake

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Why Sedimentation is a Problem

Causes of Sedimentation

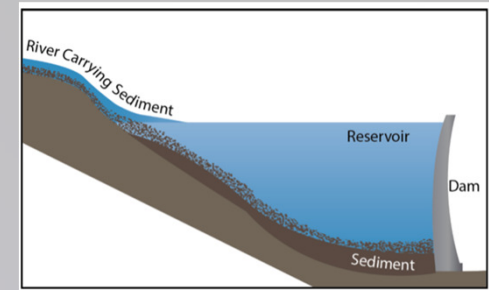


Figure 3: Kansas Water Office 2019

Sedimentation rates change due to two main variables: water flow and watershed factors. The obstructions created by dams are demonstrated in the figure above. The watershed characteristics determine the amount of soil available to erode via the land use and climate.

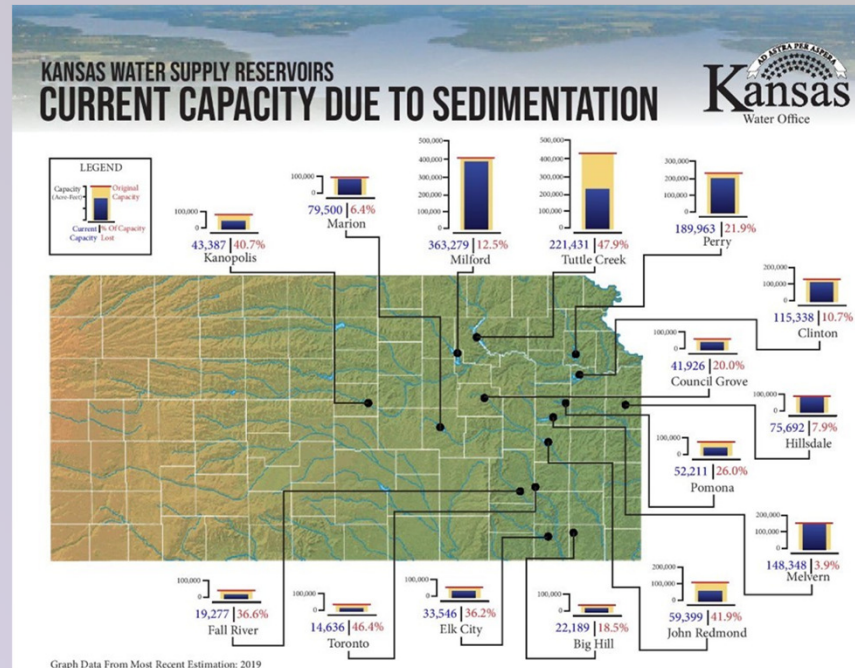


Figure 2: Current Capacity (Kansas Water Office, 2019)

Sediment Dating Methods

1) Optically Stimulated Luminescence (OSL)

- Has recently been developed to be more precise and reliable than in the past.

1) Lead-210

- Ideal for dating because of rapid decay rate, quick transference from water to sediment, and accuracy of method (Evans & Rigler 1980; Krishnaswamy, 1971).

Both methods above accurately date recently deposited sediments (within the last 100 years) and can be used to determine sedimentation rates.

1) Cesium-137

- Can be highly accurate, but only marks significant fallout events, limiting its ability to date sediments by a single year or decade.

1) Carbon-14

- Primarily used for and most reliable with dating sediments much older than the past 100 years.

Characteristics of lake sediments

Soil Characteristics including texture, type, and structure, all can have an influence on the sediments found in the lake.

Sedimentation in lakes can come from many different areas upstream including runoff from fields and bank erosion. The picture of Marion County Lake to the right shows different soil types in the area.

Marion County Lake Area

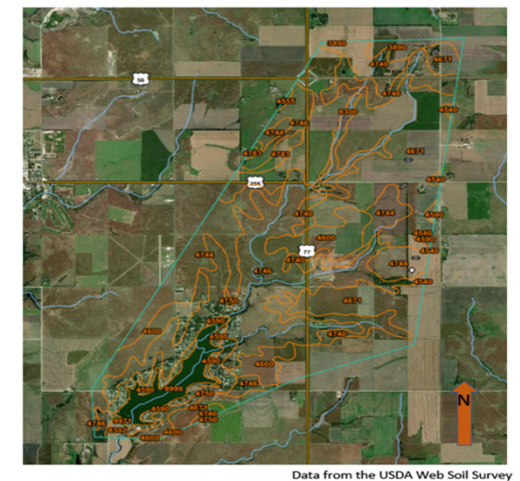


Figure 4: USDA Web Soil Survey 2020

Construction of Marion County Lake and Park



Figure 1: After completion of construction (Hett, 2017)

Work was started March 21, 1936, by the Civilian Conservation Corps under supervision of Supt. E. C. McBurney. The park area is 652 acres and the lake surface covers 160 acres. In 1937, Marion County Lake was completed.