

# Sedimentation in the Upper Reaches of Lake Greenwood



Lake Greenwood was constructed in 1940 on the Saluda River near the town of Greenwood, SC. The lake has a surface area of approximately 11,400 acres and receives runoff from a watershed of 1,165 square miles (745,600 acres) situated in the Upper Piedmont.

This report summarizes a study of **sedimentation in the upper reaches of Lake Greenwood**. Conducted under the direction of the Saluda-Reedy Watershed Consortium (SRWC), this work **documents significant sedimentation that has impacted the lake since its construction**. Historic land uses in the rural areas of the watershed have included extensive row crop agriculture during the 40's and 50's, giving way since the 60's to a landscape dominated by mixed forest cover. In the upper portion of the watershed, particularly in the Reedy River subwatershed, the rural landscape has been rapidly converted to urban and suburban land uses. In both rural and urban areas, poor conservation practices have resulted in sediment being delivered to area streams and lakes at an accelerated rate. Much of this sediment ends up in Lake Greenwood or other impoundments in the watershed. The Buzzard's Roost Dam at Lake Greenwood is an operating hydroelectric facility, and the lake is a significant recreational resource for west-central South Carolina. Lake Greenwood is the sole drinking water supply source for the City of Greenwood and much of Greenwood County. Therefore, water quality is of great concern to local residents and officials.

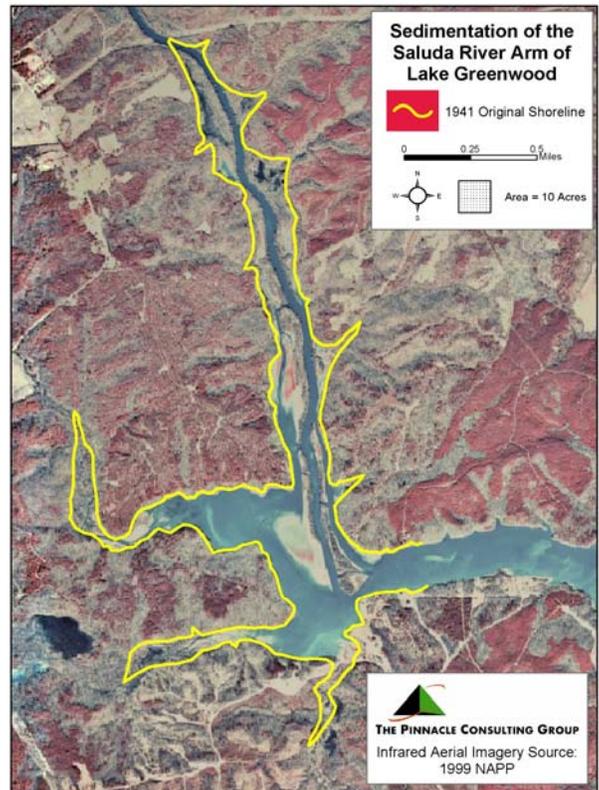
This SRWC study was conducted in the upper reaches of Lake Greenwood, in the area where the major tributary streams enter the lake. This area comprises about seven percent of the lake. The study was performed in two phases:

- The Natural Resource Conservation Service (NRCS) conducted a survey via boat to assess how much sediment had accreted below waterline (elevation 439 feet msl).
- Pinnacle Consulting Group, an SRWC member, used GIS techniques to examine areas not accessible by boat, including areas where sediment had accreted above the waterline.

This study has shown that in the upper seven percent of Lake Greenwood, **approximately 307 acres of water area has disappeared** due to sediment accumulation. Equally important, roughly **6200 acre-feet of water storage capacity has been lost** in just this small portion of the lake. Including the sediment volume accreted above waterline, the total volume of sediment delivered to this uppermost portion of the lake is 11 million cubic yards. As the sediment from upstream has accumulated, these hundreds of acres

This project was sponsored by the Saluda-Reedy Watershed Consortium and has involved technical work by Pinnacle Consulting Group and the USDA-NRCS. The collaboration of the Foothills Resource Conservation and Development Council and the Ninety-Six Resource Conservation and Development Council is also appreciated. Watershed Insights Report No. 1, authorized for release by SRWC on 01 April 2004. Key Contact: Dr. Dave Hargett, Pinnacle, [dhargett@northwind-inc.com](mailto:dhargett@northwind-inc.com) 864.787.8160. The SRWC is a broad-based group of universities, public agencies, private consultants, and non-profit organizations focused on assuring "Clean, Healthy and Abundant Water for a Sustainable Economy and Environment Throughout the Saluda-Reedy Watershed".

of accreted sediment have now become vegetated land surface, although regularly flooded. In adjacent areas of the lake, accumulating sediment has made the waters progressively more shallow. The map below shows sedimentation in the Saluda River arm of Lake Greenwood (one of several such arms of the lake).



This sedimentation equates to:

- 307 acres of lake surface area transformed to vegetated bottomlands, not including exposed mud-flats;
- An average of **16.6 cubic yards of sediment delivered to the lake for every acre of land** (in the applicable portion of the watershed), or about 11.2 tons of soil trapped in Lake Greenwood for every acre of the watershed, or 2.4 dump trucks of soil per acre of the watershed;
- **Over two billion gallons of water storage volume lost due to sedimentation**, which equates with about 3000 gallons of storage lost for every acre in this portion of the watershed.

While some accumulation of sediment into man-made impoundments such as Lake Greenwood is natural, the SRWC believes that rates of **sediment yield in the Saluda-Reedy watershed** have been **significantly accelerated** compared to natural conditions. The SRWC team is continuing to study historic land cover and other factors affecting rates of sediment yield.

In addition to the **loss of water supply capacity**, the rapid accumulation of sediment negatively affects Lake Greenwood in several other ways, including:

- **Loss of waterfront land** to accreted sediment, which in turn restricts lake access from homeowners' properties, and may cause a **loss of property value**;
- Deposition of sediment causes the lake to become shallower, **destroying habitat** and causing warmer water temperatures that can contribute to more frequent and **serious algal blooms**;
- Sediment input from upstream sources can **carry pollutants** that can harm both humans and wildlife;
- Increased turbidity not only degrades water quality and habitat, but also results in **increased water treatment costs** for consumers; and
- Shallower water leads to **decreased boat and recreational access** from the lake and therefore lost recreational capability and **reduced recreational revenues**.