

# SILT: IT'S IMPACT ON THE CITY OF ROSWELL'S CECIL WOOD WATER PURIFICATION PLANT

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## ABSTRACT

**History of the Watershed.** Twenty-five years ago, Big Creek watershed was almost all small farms with cultivated row crops and cattle production, with about 60% woodlands. At that time, turbidity levels were high (average year 15 NTU, according to plant records), but turbidities were of colloidal nature, with a clean bottom and sand bars.

**Present Condition.** Now there are few row crops left, but cattle and horse farms are still very much part of the watershed. All of this is changing rapidly to residential and Industrial Parks. The turbidities are still high (yearly average of 25 NTU, according to plant records) but there is a major difference. The bottom is laden with silt and top soil and there are no more sand bars, only mud bars.

**Steps Taken to Prevent Silt.** Watershed inspections are normally done semi-annually for silt control. Pictures and locations on topographical maps are sent to the cities of Cumming, Alpharetta, Roswell, and Fulton County when violations are found.

However, there has been very little success in the area of prevention of silt intrusion. Even when pictures and exact locations of violations were given to the appropriate government agencies, very little (if anything) was done to correct the violations. Best management practice violations were not addressed. Only the most obvious violations such as no silt fence or the fence was not standing were pursued.

**The Impact of Silt on the Cecil Wood Plant.** Turbidities typically rise very quickly after a rain event. (Example: from 25 NTU to 400 NTU within one hour). This is the direct result of poor silt control. This high solid loading of the plant not only cause an increase in chemical costs, but also an extreme strain on the operator to maintain a high quality water. Coagulants, pH adjusters, and chlorine and other oxidizers must be quickly increased in the correct amounts to match the demand of incoming raw water.

**Costs of Increased Erosion.** The operating costs for the water purification plant are approximately 60% higher than they would be without the human-induced erosion in the

creek. About half of this increase (30%) is due to increased construction in the watershed, and about half of this increase (30%) in operating costs (chemical costs) is due to poor erosion control. Therefore, poor erosion control and rapid increased growth has resulted in a 60% increase in operating costs.

Capital costs have increased as well. Tube settlers (another form of solids removal) were installed this year because of the high solids loading of the plant. The costs incurred with installation of the tube settlers was \$120,000.00.

Dredging, which is necessary to keep sand, silt, etc. from clogging intakes, has become more frequent. Normally we would dredge every 15 years for sand. The future of the frequency of dredging is not known. Estimated intervals now are every 3-years. Dredging is presently being done now at a contracted cost of \$37,500.00. This is a very economical price because we are separating the sand, stone and silt/topsoil matrix and selling all.

To use a "drag bucket" and haul away the estimated 20,000 cubic yards of material to a landfill or other suitable place would cost an estimated \$200,000.00.