

Claymont Woods Subdivision – Watershed Analysis and Capital Improvement Plan

City of Chesterfield, Missouri

Residents of the Claymont Woods Subdivision were increasingly concerned about erosion problems along adjacent tributaries and sedimentation of their 5-acre lake. Intuition & Logic provided hydrologic modeling, geomorphic analysis, and management recommendations to control erosion and sedimentation throughout the 645-acre drainage basin. Our analysis included 9 different headwater reaches in the upper Creve Coeur Creek Watershed, totaling more than 12,000 feet of open channel.

As a result of the analysis, we determined that systemic channel erosion contributes a substantial amount of silt and sediment to the Claymont Woods Subdivision lake. Many of the tributaries contributing to the Claymont Woods Subdivision lake were adjusting by means of channel incision or meander migration. Channel incision is a process of channel downcutting, or removal of material from the channel bed, which typically results in a deep, “V” or “U”-shaped cross-section with steep, scoured banks. Meander migration is an adjustment in channel planform that includes lateral channel shift and down valley migration. These processes, and subsequent channel instability, were largely attributable to alterations in watershed hydrology that occurred as the region urbanized between 1960 and 1991.



Incising tributaries produced large volumes of liberated sediment from eroding the channel bed and banks. Geomorphic data suggested that the Claymont Main Stem had already incised approximately 3 feet, while many of the tributaries incised between 1 and 3 feet. Sediment generation and subsequent deposition in the lake would continue until the incising streams reached a stable channel shape or until incision is controlled through direct

intervention. Our recommended interventions focused on intercepting and storing sediment from upstream reaches prior to it reaching the lake, in addition to stabilizing degraded reaches within the subdivision boundaries.