
**Assessment of Bio-Contaminants in the Porter Creek Basin of the Homochitto
National Forest**

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ABSTRACT

Total coliform and/or *Escherichia coli* (*E. coli*) contamination of surface water is often attributed to loading of fecal material from agricultural, urban and residential areas or warm-blooded wildlife. The Homochitto Ranger District of the US Forest Service in southwest Mississippi is developing a 1000-acre lake (Okhissa Lake) in the Porter Creek sub-basin. The lake is being created by damming Porter Creek, which flows north to the Homochitto River. This lake will be used mainly for recreation and is projected to receive 235,000 visitors annually. Clean, high quality water is necessary to support this use. Private residences are located along roads in the headwaters of the sub-basin. Public sewage treatment is not available and many of the residences have no or ineffective septic systems. To evaluate the potential effects of the current residential development with respect to State and the US Environmental Protection Agency water quality standards for coliform bacteria and *E. coli*, we embarked on a monitoring program prior to damming of Porter Creek. Ten monitoring stations were established within the Porter Creek sub-basin where grab water samples were collected weekly in pre-sterilized bottles. Samples were then analyzed for total coliform and *E. coli* using colilert® substrates. Samples were enumerated by the absence or presence in Quanti-Tray™ cells and the data expressed as most probable number (MPN) per 100 mL. To determine saturated, K_{sat} , and unsaturated hydraulic, $K(h)$, conductivities, double ring and tension infiltrometers were used, respectively. Results indicated spatial and temporal distribution of either total coliform or *E. coli* in the sub-basin. Total coliform and *E. coli* were consistently higher ($p < 0.05$) in the northern tributaries than those in the south. Hydrologic characterization of soils in the sub-basin showed significantly higher K_{sat} and $K(h)$ in the south of the sub-basin than the north ($p < 0.05$). Preliminary results indicated that the presence of consistently higher number of total coliform and *E. coli* in the northern portion of the sub-basin was due in part to subsurface transport through the coarse texture soils in the south since the direction of flow is north. Further studies are underway to measure *E. coli* travel time and to characterize subsurface hydrology using non-invasive techniques.