

# Working Together to Preserve and Protect the Dix River Watershed

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## Dix River Watershed Sampling Continues

Since March of 2006, significant sampling efforts have been put forth to determine the source of impairment to Herrington Lake. Studies on the lake and the Dix River are ongoing that seek to uncover the primary sources of excessive nutrients and bacteria in the watershed (excessive nutrients and bacteria result in poor water quality). Once the sources are determined, efforts will then be made to lessen the extent of the problems.

The Dix River Watershed project continues to challenge our project team with regard to identifying pollutant sources.

### *Determining Land Use Key to Sampling Efforts*

Planning and land use characterization lie at the core of our work in the Dix River Watershed. Intimate knowledge of the current land use is essential to developing an efficient monitoring plan. Land use information not only dictates sampling locations and parameter requirements, but also necessitates the timing of sampling. This was never truer than in the Dix River Watershed. Tightly clustered, mixed land use creates a challenge for separating the contributions of obvious pollutant sources.

Stormwater flow sampling is necessary to accurately determine the extent of nutrients and bacteria from nonpoint sources and/or failing sanitary sewer collection systems.



The period in which water is first flushed off the land following a storm event is when streams have been shown to contain the highest concentration of nutrients, pathogens, and sediment. Sampling during this period allows for the most accurate quantification of pollutants from overland flow. Unfortunately, this “peak flow” sampling is not as simple as it sounds. Due to the scale of the Dix River Watershed, this is quite a challenge.



For the Dix River Watershed, sampling during this short period on a large-scale project presents a logistical and monetary challenge. Since expensive automated samplers are not economically feasible,



Third Rock uses low-tech rising-stage samplers to ensure that samples are collected during rising stream flow.

These devices are based on designs used for sediment sampling. Plastic bottles are attached to a fence post in the stream channel. The bottles are topped with a rubber stopper containing two copper tubes – the upper functions as an air vent and the lower fills the bottle with water upon inundation. Once a storm event has begun, sampling crews mobilize to collect the samples either before the water recedes or shortly thereafter.

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## E. Coli in the Watershed

Nine months of E. coli bacteria sampling has yielded some eye opening results in the Dix River Watershed. Though not all E. coli is bad, its concentration in our surface waters is used as an estimate for the potential for the spread of disease.

For the Dix River project, 30 sampling sites are spread throughout the 282,000-acre watershed, which encompasses an area reaching from Lake Herrington and the City of Danville to the City of Brodhead near I-75. To date, all station results have consistently yielded E. coli values above the recreational contact limit of 130 colony counts/100ml. Averages ranged from 250 counts/100ml to over 6000 counts/100ml.

Mapping with a visual representation of E. coli concentrations from each station in the watershed can be found at the Dix River project website: <http://www.dixriverwatershed.org/>. Just click on the "What Are We Doing" link and look for E. coli results mapping.

To best guide remediation efforts, the Dix River Watershed Council has decided to fund additional sampling that may help to define the sources in the hotspot areas. Based on the landuse surrounding the hotspots, the Council has decided to use Microbial

Source Tracking (MST) to partition the source of bacteria with a primary emphasis on humans and cattle. For more information about MST and its application to this project, contact Lee Colten at the Division of Water at [Lee.Colten@ky.gov](mailto:Lee.Colten@ky.gov).

## Danville Applies for Funds to Remediate Clark's Run Watershed

In November 2006, the City of Danville, with assistance from the Division of Water and Third Rock Consultants, applied for a US EPA Targeted Watershed Implementation Grant. This program promotes successful community-based approaches and management techniques to protect and restore water resources. The Clark's Run watershed is an ideal candidate because Danville, the surrounding community, and local organizations such as KY River Watershed Watch and Clark's Run Environmental and Educational Corporation (CREEC) have a proven interest in working to protect and restore Clark's Run.

If selected, nearly \$500,000 will be available to implement management strategies such as Best Management Practices (BMPs) such as bioretention areas, stormwater wetlands, and riparian zones to help improve water quality and the biological integrity of Clark's Run.

