

# ST. JOSEPH RIVER REVIEW

A PUBLICATION BY THE ST. JOSEPH RIVER WATERSHED INITIATIVE

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www.sjrwi.org

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## Work on the Bacterial Source Tracking Project Progresses

The St. Joseph River Watershed Initiative has been awarded a grant from the Indiana Department of Environmental Management (IDEM) that funds, among other projects, the Initiative's Bacteria Source Tracking (BST) program. The BST program is a joint effort by the Initiative and the Indiana University-Purdue University Fort Wayne Department of Biology. Dr. Deborah Ross of IPFW is the lead scientist in charge of the research.

Monitoring conducted by the St. Joseph River Watershed Initiative, the Allen County Department of Health, and the Indiana Department of Environmental Management (IDEM) has identified elevated levels of E-coli in the St. Joseph River Watershed throughout the warm-season months. However, additional research is needed to accurately determine whether the sources of contamination are human (from failing septic systems or sewage treatment facilities), domestic pets, livestock or wildlife. The BST program will provide a database of characteristics of known fecal contaminants that can then be compared to water samples taken from throughout the watershed.

The BST program uses a technique called Antibiotic Resistance Method (ARM) to determine the sources of fecal contamination in rivers and streams and was initiated in spring of 2001 with a grant from the Fort Wayne Community Foundation, which funded setup of the database and baseline sampling.



Testing continued throughout the summer and fall of 2002 under the IDEM grant, resulting in further refinement of the ability to positively identify fecal contaminant sources. The Section 319 grant provides funding for extensive sampling and database refinement through June of 2004.

During the summer 2002 sampling period, antibiotic resistance analysis was performed twice (mid summer and late summer) on 19 of the monitoring sites established within the watershed, plus one additional site on the St. Joe River near the point at which water is withdrawn for the City of Fort Wayne. All of the samples from both dates displayed either human, geese or horse antibiotic resistance profiles as the major source. A significant overlap in identifying horse, dairy cattle and human sources remains and must be further refined.





The 2003 sampling season will focus on further refinement of the database with a goal of differentiating the horse/human/dairy overlap. Interviews with veterinarians and dairy farmers will focus on determining whether one or more antibiotics that are used for animals but not humans can be identified. This will necessitate further source sampling during the summer of 2003.

Water from the entire watershed set of sampling points will be collected again in 2003. Additionally, a subset of five or six sites will be selected to perform more frequent sampling in order to build up a database on the effect of time on the source determination.



Two other factors, flow rate and distance downstream from a contaminant source, have been reported to affect the analysis. Therefore, urban sites where combined sewer overflow (CSO) is likely to impact the water quality will be identified and sampled during and after a storm event to determine the impact of combined sewer overflow on the observed antibiotic resistance patterns.

Other plans include identifying locations in the watershed where particular sources of fecal bacteria are likely to impact the water (i.e. a livestock operation located near a stream or ditch). A sampling regime will be designed to take samples immediately above the site, and then at various distances downstream of the site, to determine how far a site might be expected to impact the results of antibiotic resistance analysis.

The St. Joseph River Watershed Initiative is a non-profit organization formed to promote economically and environmentally compatible land uses that improve the water quality of the St. Joseph River. For further information, see our website at [www.sjrwi.org](http://www.sjrwi.org).

### St. Joseph River Watershed Initiative Water Quality Monitoring Sites



## St. Joseph River Watershed Initiative

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