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Summary of E coli test results for the Poplar River 2005 and 2006

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Bacteriological sampling was performed on the Poplar River in collaboration with the Minnesota Pollution Control Agency (MPCA) Lake Superior Beach Monitoring Program. Funding was provided by a grant from Minnesota's Lake Superior Coastal Program administered by the Minnesota Department of Natural Resources (DNR). Sampling for *Escherichia coli* (*E. coli*) was performed during the summers of 2005 and 2006 from 3 locations on the River which are listed below:

- Site 1. Upstream of ski area at superior hiking trail footbridge (S001-753);
- Site 2. Downstream of ski area at golf course footbridge (S004-406); and,
- Site 3. At the bridge of Lutsen Resort near L. Superior (S000-261).

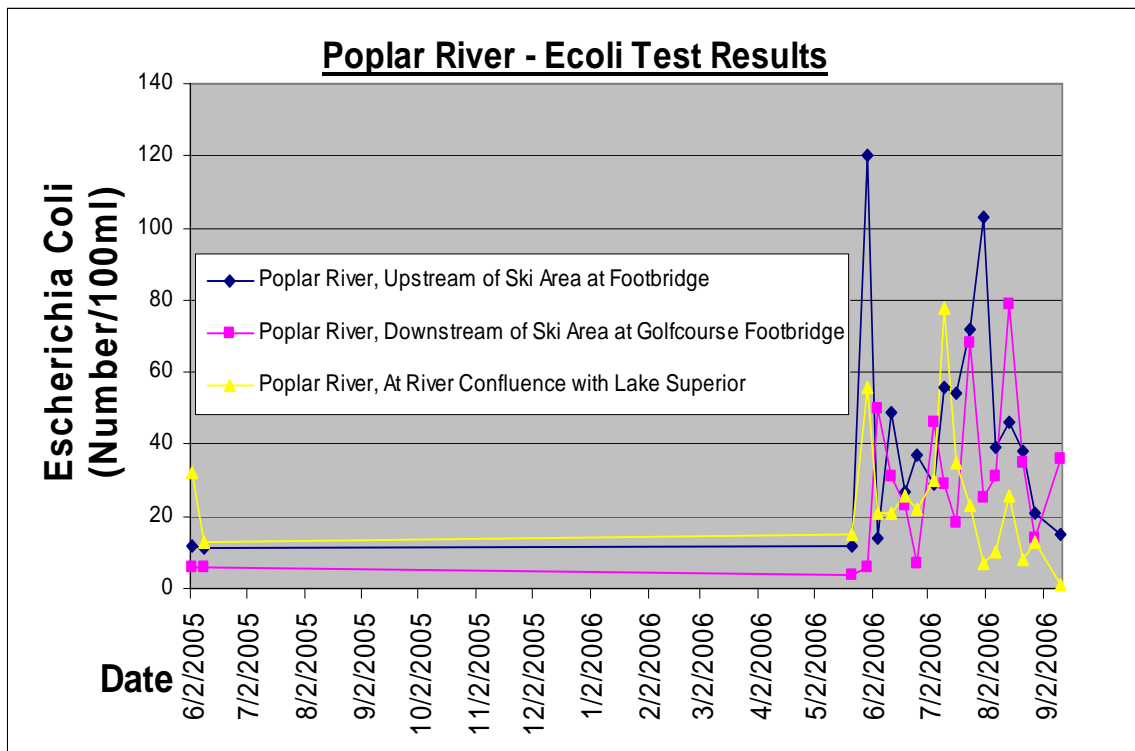
Grab samples were taken at these locations by Cook County staff and North Shore Analytical, Inc., a commercial laboratory certified by the Minnesota Department of Health, was contracted to perform the laboratory analyses. Sampling procedures followed those by the MPCA Beaches Program, where a sterile container was plunged to a depth of approximately one foot and sealed. Results were submitted to the STORET database and can be accessed through the MPCA Environmental Data Access (EDA) system at the following address: <http://www.pca.state.mn.us/data/eda> . note that these three stations have also been used for water quality monitoring programs conducted by the MPCA. Water is routinely collected at Sites 1 and 3 for various water quality parameters and stream discharge is estimate from stage height at Site 2 (Anderson et al. 2003; http://www.duluthstreams.org/general/reports_NShore.html). Additionally, since 2006, in-stream sensors for temperature, turbidity and specific electrical conductivity have been measured by the Natural Resources Research Institute at the University of Minnesota-Duluth (NRRI-UMD) at Site 2 where flow is determined (Axler et al. 2007; http://www.duluthstreams.org/general/reports_NShore.html).

E coli are a subgroup of fecal coliform bacteria that are used as an indicator of the potential presence of pathogens. There are many different strains of *E. coli* and they are classified into more than 170 serogroups. Although most strains of *E. coli* are harmless and live in the intestines of healthy humans and animals, the *E. coli* O157:H7 strain produces a powerful toxin and can cause severe illness. Minnesota and U.S. Environmental Protection Agency (EPA) recommendations for posting advisory signs at swimming beach areas are based upon the *E. coli* or fecal coliform bacteria content of water samples collected. Evaluation of water sample results is based on the EPA

recommendations for acceptable *E. coli* levels, and Minnesota fecal coliform standards as specified in Minnesota Rule 7050.0222. The federal acceptable water sample standard for *E. coli* is (go to <http://mnbeaches.org/science/criteria.html> for details):

- The geometric mean based on not less than five samples within a 30-day period shall not exceed 126 *E. coli* colonies per 100 ml of water; and,
- Content shall not exceed 235 *E. coli* colonies per 100 ml of water in a single sample (MN Beaches, website).
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The results of the sampling are summarized in the figure and table below:



The maximum value observed was 120 colonies/100 ml in May 2006 at the upstream location above the Lutsen ski area. Maximum values were 80 and 78 at the Golfcourse Foot Bridge and Lutsen resort sampling locations and occurred in August and July of 2006. Average sample values decreased from the upstream to downstream sampling locations. No samples exceeded the federal standard of 235/100 ml sample. A table with a summary of the sampling values at the three sampling locations is listed below:

Poplar River – E coli Summary of Results for 2005 and 2006				
Sampling Station (Storet ID)	No. of Samples	Average Value (#/100ml)	Maximum Value (#/100ml) Month	Minimum Value (#/100ml) Month
Upstream of ski area at superior hiking footbridge (S001-753)	20	39	120 May	9 September
Downstream of ski area at golf course footbridge (S004-406)	23	23	80 August	2 September
Footbridge at Lutsen Resort near L. Superior (S000-261)	18	18	78 July	1 September