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A Public Participation GIS Application for Citizen-based Watershed Monitoring in the Pamlico-Tar River Basin, North Carolina

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**Subject Headings:**

**Pamlico-Tar River Foundation. Citizen Watershed Monitoring Project.**
**Water quality monitoring stations -- North Carolina -- Tar River Watershed (Person County-Beaufort County)**
**Water quality management -- North Carolina -- Tar River Watershed (Person County-Beaufort County) -- Citizen participation.**
**Water quality management -- Geographic information systems -- North Carolina -- Tar River Watershed (Person County-Beaufort County)**

Abstract:
Water quality is a serious concern throughout eastern North Carolina due to development pressure, agricultural runoff, and animal operations. A local environmental organization was concerned that water quality monitoring in the Pamlico-Tar River basin is hampered due to a sparse network of sampling sites and inconsistent data collection. Consequently, a volunteer watershed monitoring project was initiated by Pamlico-Tar River Foundation (PTRF). University researchers partnered with the PTRF to assist by providing two GIS-based solutions: (1) guidance for the selection of water quality monitoring sites, and (2) distribution of water quality data to the public in mappable form via the Internet. A multi-criteria evaluation was performed that mapped and quantified a pollution potential index for all 167 local watersheds in the basin to guide site selection. An interactive Web mapping tool was designed using Manifold IMS software and deployed on university and commercial hosts. The online map service has been operational since 2005 and provides the general public valuable information regarding the health of local water resources. The results reported here demonstrate a collaborative partnership between university researchers and a grass roots environmental organization that can be characterized as a form of Public Participation GIS.

*Keywords:*

multi-criteria evaluation, Public Participation GIS, water quality monitoring, web mapping