

Development of a Habitat Assessment Tool for PDA

Henry B. Manguerra¹, Vaishal Sheth¹, and Brian Watson²

¹Tetra Tech, Inc., 10306 Eaton Pl, Suite 340, Fairfax, VA 22030

²Tetra Tech, Inc., 2110 Powers Ferry Road, Suite 202, Atlanta, GA 30339

Biographical Sketches of Authors

Henry Manguerra is a principal engineer at the Fairfax, Virginia Office of Tetra Tech, Inc. His experience includes the management and technical oversight of projects involving development of GIS, decision support systems, models, databases, and web applications to support various Clean Water Act programs of EPA, states, and the tribes. For example, he was Tetra Tech's project manager for EPA BASINS 3.0 development and its customization for various states and tribes. More recently, he led the development of a web-based user interface of STORET and other state's water quality databases to support impairment analysis, 303(d) listing, and TMDL development.

Vaishal Sheth is a GIS software engineer at the Fairfax, VA office of Tetra Tech, Inc. He has practical experience in all parts of the software systems development life cycle including the assessment of user requirements, system design, implementation, testing, quality assurance and deployment. Mr. Sheth has been a lead developer for the Habitat Assessment Tool for PDA, Utah Data Assessment and Integration Tool, EPA American Indian Environmental Office Grant Tracking Tool and Florida DEP Environmental Data Extraction Tool.

Brian Watson is a civil engineer specializing in environmental engineering and water resources engineering, including hydraulics, hydrology, water quality modeling, and land development. He has experience with watershed, groundwater and water quality models including HEC-1, HEC-2, SWMM, HSPF, NWS DAMBRK and FLDWAV, MODFLOW, WQMAP, WASP, and EFDC. He also has experience in GIS related programs including ArcInfo, ArcView and BASINS. He has performed numerous hydrologic and hydraulic studies for various land development projects, and has worked on a variety of Total Maximum Daily Load (TMDL) projects.

Abstract

With advances in computer technology, the traditional use of paper-based forms to collect field data are now slowly being replaced by software applications that run on Personal Digital Assistants (PDAs) or pocket computers. This paper describes the design and development of a similar application for habitat assessment for the Tennessee Department of Environmental Conservation (TDEC). The application which runs on a Windows CE Operating System provides the user a form-based user interface for conducting the assessment and recording habitat data such as physical stream characteristics; land use and other watershed characteristics; water quality and biota measurements; and other qualitative observations. The application assists in ensuring that the habitat assessment is conducted completely and consistently with all other assessments. It also facilitates and enhances data entry through the use of predefined lists, automated error checking, and built-in calculators (e.g., total habitat score) thereby minimizing errors in data entry. Once data are recorded in the PDA, they can be uploaded and consolidated to a common Microsoft Access database in a desktop computer allowing near real-time sharing of data among many users. This also eliminates the intermediate step of manually transferring the data from the paper format into the computer, thereby saving valuable time and resources. The application allows bi-directional data transfer between the PDA and the MS Access database allowing users to transfer predefined station data from the MS Access to the PDA. The MS Access database is also customized to provide users a form-based interface for browsing, editing, and reporting the consolidated habitat data. On-going efforts include pilot field-testing of the application by TDEC staff. Future development objectives include the integration of this application with other field data capture technologies such as a GPS receiver to receive location information.