

STORET Data Query, Extraction and Analysis Tools

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This paper will describe two alternative technical solutions and example implementations for visualizing, extracting, and analyzing physical, chemical, and biological data from a modern STORET database. Both solutions use the Internet as a medium for transporting data from the STORET database server to the client application.

The first technical solution is based on Java Server Page technology and a highly customized ArcIMS client that provides users a wizard-based, step-by-step approach to spatially select the watershed of interest and the monitoring stations located within the watershed. The data associated with the selected monitoring stations can be visualized using statistical summary tables, and time-series plots to assist the users in selecting the stations, parameters, and period of record to extract, download, and import into the target desktop client applications. The desktop applications include EPA BASINS system and a custom MS Excel spreadsheet-based tool that can be used to further analyze the data using sophisticated statistical analysis and plotting techniques such as regression plots and flow and load duration curves. This technical solution was implemented for Utah Division of Water Quality to support development of TMDLs.

The second technical solution uses XML and Web Services technology to transfer data from the modern STORET database to a custom desktop client application written in Map Objects Java Edition. The desktop client application provides the user the ability to select the watershed of interest and download the monitoring data associated with the stations located within the watershed. The spatial data can either be on-demand seamlessly downloaded to the desktop client application or accessed through the ArcIMS map services hosted at the central spatial data repository. The client application has been customized to provide the user various tools and customization options for analyzing the data to support impairment analysis. This includes the ability to store and modify water quality standards, perform exceedance analysis, and other related calculations according to a predefined set of impairment water rules. Preliminary results for implementing this technical solution for El Paso County, Colorado will be presented.