USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: The Development of a Regionalized Approach to Estimate Low Streamflow Frequency at Ungauged River Sites in the Northeastern United States

Duration: August 15, 1997 to August 14, 1999

Federal Funds Requested: $62,096

Non-Federal Matching Funds Pledged: $125,204 **Principal Investigators:**

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Congressional District: New York State

Statement of Critical Regional or State Water Problems:

Understanding the frequency and duration of low streamflow events is critical to the efficient management of water resources throughout the Northeastern United States. This is especially important for water quality management, where low streamflows provide necessary dilution of non- point source and point source pollution discharges, and water quantity management, where low streamflows greatly influence water usage policy. For example, in every state estimates of low streamflow statistics are needed for issuing and/or renewing National Pollution Discharge Elimination System (NPDES) permits, as required by provisions in the Clean Water Act of 1977 [US EPA, 1990]. Low streamflow statistics are also used to plan water supply, hydropower, and irrigation systems, design cooling-plant facilities, site treatment plants and sanitary landfills, determine waste-load allocations, and make decisions regarding interbasin transfers of water and allowable basin withdrawals. In addition, low streamflow events are often critical periods for aquatic habitats due to potentially low dissolved oxygen concentrations and/or high concentration of pollutants.

In general, agreed upon methodology exists for assisting water managers in obtaining low streamflow statistics at river locations with continuous gauging stations. These gauging stations provide a historic record of streamflows at a specific river site. Unfortunately, most locations where low streamflow statistics are needed are not coincident with such gauging stations. While a number of different methods have been proposed to estimate low streamflow statistics at ungauged river sites, no study has ever been performed comparing these techniques to determine which is the most appropriate. Taking a regionalized approach to this problem by dividing the Northeastern United States into

five geopolitical subregions, this research will provide water managers with a scientifically based recommended methodology for estimating low streamflow statistics at ungauged river sites.