

Kara Watson – Hydrologist/GIS Specialist, GS-12

GIS

Project Chief-StreamStats Web Development project. This effort entailed preprocessing and preparation of the NHD (National Hydrologic Dataset), HUC14, and NED (National Elevation Data) datasets for implementation in the National StreamStats web page for the State of New Jersey. ArcInfo, Spatial Analyst, and ArcHydro tools were used to calculate channel slope, channel length, basin shape index, percent land use, and population density. Work with flow accumulation grids, flow direction grids, was useful in setting up basin delineation routines.

GIS specialist for the Pinelands project. GIS analysis along with RockWorks to process water level data, GPR data, and log data to determine thicknesses and tops of underlying aquifers and confining units. Used ArcInfo and Spatial Analyst to determine percent sand content in the underlying units. Another product of this project was a shared Access database linked to GIS using an ArcMap file, creating a dynamic link between the database and GIS.

Various map making for figures in reports, displays, and analysis. Writing metadata

Surface-water analysis and statistics

Project Chief-Streamflow characteristics project. Trend tests on high and low-flow data and rainfall data using Kendall's Tau. Use of MOVE1 correlations for low-flow data analysis.

Project Chief- Flood Frequency Project. GIS analysis to collect basin characteristic data for input to help determine new regression equations. Use of MiniTab and GLSNet to run regression analysis on basin characteristic and flood frequency data to develop updated Flood Frequency regression equations.

Sub-surface geology

Experience using GPR (Ground Penetrating Radar) equipment as well as the data processing and interpretation using GroundVision software.

Reports

Walker, R.L., Reilly, P.A., and Watson, K.M., 2007, Hydrogeologic framework in three study areas in the New Jersey Pinelands, 2004-06: U.S. Geological Survey Scientific Investigations Report 2007-

Watson, K.M., Reiser, R.G., Nieswand, S.P., and Schopp, R.D., 2005, Streamflow characteristics and trends in New Jersey, water years 1897-2003: U.S. Geological Survey Scientific Investigations Report 2005-5105, 131 p.

Fact Sheets

Reiser, R.G., Watson, K.M., Chang, M., and Nieswand, S.P., 2002, Surface-water data and statistics from U.S. Geological Survey data-collection networks in New Jersey on the World Wide Web: U.S. Geological Survey Fact Sheet FS-109-02.

Other Works Published

Surface-water coverages with full FGDC (Federal Geographic Data Committee) metadata. The metadata was reviewed by the New Jersey Department of Environmental Protection. The coverages are published in the NJGIN (New Jersey Geographic Information Network) and on the NJ DEP website:

<http://www.state.nj.us/dep/gis/>.

The published coverages are:

USGS Continuous Stream-Flow gages

USGS Low Flow gages

USGS Crest-Stage gages

USGS Continuous Tide gages

USGS Tidal Crest-Stage gages

USGS Surface-Water-Quality gages