

Emmanuel G. Charles – Hydrologist, GS-12

Interests:

Modeling ground-water flow, Evaluating ground-water resources, Ground-water recharge, Climate change and hydrology, Applications of Artificial Neural Networks to water resource problems, Ground-water quality, Structural geology, Relationship of bolide impacts to plate tectonics

Skills:

Proficient with Word, Excel, ArcGIS, MODFLOW and various related modules and tools, ARGUS, MFI2K. Experience with water-quality databases. Field skills include various sampling techniques for ground-water, unsaturated zone, and the atmosphere. Experienced with ultra-clean water quality sampling techniques.

Bibliography:

Coppola, E., Poulton, M., Charles, E., Dustman, J., and Szidarovszky, F., 2003, Application of Artificial Neural Networks to Complex Groundwater Management Problems: *Natural Resources Research*, v.12:4, 303-320.

Coppola, E., Szidarovszky, F., Poulton, M., and Charles, E., 2003, An Artificial Neural Network Approach for Predicting Transient Water Levels in a Multilayered Groundwater System Under Variable State, Pumping, and Climate Conditions: *Journal of Hydrologic Engineering*, v.8:6, 348-360.

Fischer, D., Charles, E.G., and Baehr, A.L., 2003, Effects of stormwater infiltration on quality of groundwater beneath retention and detention basins: *Jour. of Env. Eng.*, 129:5, 464-471.

Watt, M.K, Kane, A.C., Charles, E.G., and Storck, D.A., 2002, Hydrology of the unconfined aquifer system, Rancocas Creek area, Rancocas, Crosswicks, Assunpink, Blacks, and Crafts Creek Basins, New Jersey, 1996: U.S. Geological Survey Water Resources Investigations Report 2002-4280, 5 plates

Baehr, A.L., Charles, E.G., Baker, R.J., 2001, Methyl tert-butyl ether degradation in the unsaturated zone and the relation between MTBE in the atmosphere and shallow ground water; *Water Resources Research* v. 37, p. 223-233.

Charles, E.G., Storck, D.A., and Clawges, R.M., 2001, Hydrology of the unconfined aquifer system, Maurice River area, Maurice and Cohansey River Basins, New Jersey, 1994-95: U.S. Geological Survey Water Resources Investigations Report 96-4225, 5 plates

Johnson, M.L., and Charles, E.G., 1997, Hydrology of the unconfined aquifer system, Salem River area, Salem River and Raccoon, Oldmans, Alloway, and Stow Creek Basins, New Jersey, 1993-94: U.S. Geological Survey Water Resources Investigations Report 96-4195, 5 plates

Charles, E.G., J. Behroozi, J. Schooley, and J.L. Hoffman, 1993, A method for evaluating groundwater recharge areas in New Jersey: New Jersey Geological Survey Report GSR 32.