



## **Progressive Water Resources**

*Integrated Water Resource Consultants*

### **Joseph D. Haber, P.G.**

**Senior Hydrogeologist**

#### **OVERVIEW**

Mr. Haber has educational and practical experience in hydrogeology, hydrology, geochemistry and geographic information systems and has worked as a water resource specialist in the State of Florida since 1999. He has experience in water use and consumptive use permitting and application preparation, including water supply demand projections, conservation plans, groundwater flow modeling, and impact analysis. Mr. Haber also has experience in production wellfield design, water quality monitoring network design and management, aquifer performance testing, Minimum Flows and Levels (MFLs) analysis, agricultural irrigation modeling, production and monitor well network design and geophysical logging. Mr. Haber has a B.S. and M.S. from the University of South Florida in Environmental Science and Policy and Hydrogeology, respectively and is a registered Professional Geologist in the State of Florida.

**Geographic Information Systems (GIS)** - Mr. Haber has over a decade of Geographic Information Systems (GIS) experience using Environmental Systems Research Institute, Inc (ESRI) ArcMap 9.3 software including ArcCatalog and ArcToolbox. Additionally, Mr. Haber's GIS expertise includes the utilization of several ArcMap Extension tools including Spatial Analyst, Geostatistical Analyst, 3D Analyst and Xtools Pro. Mr. Haber has created and maintained large geodatabases (greater than 1 TB) that include aerial imagery, attribute data as well as geographic feature data. In addition, Mr. Haber has worked with Light Detection and Ranging (LIDAR) data to produce publication-quality topographic, drainage basin and watershed maps. Mr. Haber has performed volumetric analysis of waterbodies, geostatistical analysis of water quality concentrations and surface modeling for a variety of client applications.

**Groundwater Flow Modeling and Integration with Geographic Information Systems (GIS)** - Mr. Haber has a large amount of experience working with both regional and localized groundwater flow model simulations using the United States Geological Survey (USGS) MODFLOW code and Groundwater Vistas preprocessing software. This includes experience using the SWFWMD's Southern District Model, Northern Tampa Bay Model, and both versions of the District-Wide Regulation Model (DWRM) that the Southwest Florida Water Management District (SWFWMD) uses to assess potential water use permit impacts. Mr. Haber also has experience integrating groundwater flow modeling results with GIS software to create a visual interpretation of potential impacts to legal existing users, environmental features, and MFLs.

**Water Resource Planning and Assessment** - Mr. Haber has assisted clients with planning and assessing of both groundwater and surface water resources. He has experience integrating surface water and groundwater sources with alternative sources, such as stormwater, reuse, and brackish water, to create water supply systems that are reliable, as well as sustainable, through all climate conditions. This type of water supply planning has become more imperative with the expanded rules associated with the implementation of MFLs and the expansion of Water Use Caution Areas (WUCAs) and Areas of Concern throughout the State of Florida.

**Water Quality Monitoring Network Design and Management** - Mr. Haber has over 5 years of experience designing and managing groundwater quality networks throughout Southwest Florida. This

includes scheduling sampling, coordinating and contracting with certified laboratories, quality assurance and quality control, data management and analysis, and report writing. Mr. Haber designed the Southwest Florida Water Management District's (SWFWMD) Upper Floridan Aquifer Nutrient Monitoring Network in West-Central Florida that currently includes over 80 Upper Floridan monitoring wells through west-central Florida. In addition, Mr. Haber managed the SWFWMD's Coastal Groundwater Quality Monitoring Network, which included the management and coordination of sampling approximately 800 wells annually.

**Water Use and Consumptive Use Permitting** - Mr. Haber's experience in the Brooksville Regulation Department of the Southwest Florida Water Management District (SWFWMD) consisted of Water Use Permit (WUP) application evaluation, water supply assessments, permit compliance resolution, preparation and development of groundwater flow models, and technical assistance for applicants. Mr. Haber reviewed permits for Citrus County and Marion County Utilities as well as several homeowner's associations, golf courses and agricultural interests. In addition, Mr. Haber has WUP and Consumptive Use Permit application preparation experience, including public supply, agricultural, mining, dewatering, recreational, aesthetic, and industrial/commercial water uses. Mr. Haber has worked with several public-sector clients including the City's of Venice, North Port, Bartow and Tampa, as well as private developers, agricultural and commercial clients to manage and coordinate WUP application preparation, groundwater flow modeling, reasonable demand analysis and water conservation planning to fulfill the SWFWMD's WUP conditions of issuance requirements.

## **RELEVANT EXPERIENCE**

**City of Venice WUP Renewal and Wellfield Annual Report, Sarasota County, FL** - Mr. Haber managed the WUP renewal application for the City of Venice Reverse Osmosis Brackish Water Wellfield including application preparation, reasonable demand analysis, water conservation planning and groundwater flow modeling. Mr. Haber utilized a GIS to evaluate the efficacy of the City's monitor well network and performed a spatial analysis of the seasonality of groundwater water quality concentrations in both of the City's wellfields. He also headed the evaluation and authoring of the City's Wellfield Annual Report and provided recommendations to enhance the City's Wellfield Management Plan to increase efficiency while minimizing impact.

**City of Punta Gorda Groundwater Feasibility Study, Charlotte County, FL** - Mr. Haber performed a comprehensive assessment of: hydrogeologic data and literature for both the Intermediate Aquifer System (IAS) and Floridan Aquifer System (FAS); GIS spatial analysis of water production, water quality, water level, and aquifer confinement characteristics; the potential for saline water intrusion; and identification of related wellfield management considerations. Mr. Haber compiled detailed hydrogeologic spatial data and used ESRI ArcMap software to identify optimal wellfield locations, production well specifications and preliminary wellfield configurations.

**City of Bartow WUP Renewal, Polk County, FL** - Mr. Haber performed a variety of technical support efforts including comprehensive impact analyses, hydrologic data evaluation, and numerical groundwater modeling using SWFWMD's District-Wide Regulation Model (DWRM) is GIS software. These analyses were undertaken to provide reasonable assurance that the proposed withdrawals would not adversely impact environmental features, legal existing users, or Minimum Flows and Levels (MFLs). PWR's effort ultimately assisted the City in achieving a permit authorization of 7.90 mgd.

**Peace River / Manasota Regional Water Supply Authority - Water Supply Feasibility Study, Manatee, Sarasota and Charlotte Counties and DeSoto Counties, Florida** - Mr. Haber's efforts included: a comprehensive assessment of hydrogeologic data; GIS identification of water quality, water level and aquifer confinement characteristics; numerical groundwater flow modeling; an assessment of the potential for saline water intrusion and MFL impacts; and identification of production well specifications and cost estimates. The project efforts ultimately indicated that development of integrated and regionally-connected surface and groundwater facilities has significant potential to provide sustainable and reliable supplies for the four-County region.

**Upper Floridan Aquifer Nutrient Monitoring Network, West-Central, Florida** - Mr. Haber designed and implemented a SWFWMD-sponsored water quality network designed to monitor nutrients throughout the SWFWMD's northern district area. Nitrate concentrations throughout the area have become elevated due to various land uses throughout the spring recharge basins. Mr. Haber performed a rigorous geostatistical analysis using ESRI GIS ArcMap software using a spatial autocorrelation technique (kriging) that identifies a spatial relationship between well nitrate concentrations in the upper Floridan Aquifer System. The resulting network tracks nutrients throughout the several spring-recharge basins and correlates nitrate concentrations to land use. Short-term and long-term trends associated with changes in land use are evaluated as Best Management Practices are implemented. The network expansion and sampling is ongoing and consists of over 80 monitor wells in the northern portion of the SWFWMD.

**Coastal Groundwater Quality Monitoring Program/WUP Network, Southwest FL** - Mr. Haber managed the Coastal Groundwater Quality Monitoring Network and the WUP Network that consists of over 800 monitor wells sampled annually throughout the SWFWMD. These programs continue to yield important data used to monitor saltwater intrusion and mineral upwelling along the SWFWMD coastline and in the interior parts of the SWFWMD due to groundwater withdrawal.

**Coastal Springs Water Quality Monitoring Network, West-Central Florida** - Mr. Haber managed and coordinated with District staff to sampling over 50 first and second magnitude springs within the SWFWMD annually. This project included collecting water quality samples for the analysis of major ions, nutrients, priority pollutants, nitrogen isotope and radionuclides. Mr. Haber assisted and coordinated with Florida Department of Environmental Protection (FDEP) staff during the Florida Spring's Initiative Sampling that culminated in the publishing of the Florida Geological Survey (FGS) Bulletin No. 66 – Springs of Florida.

**Lake Wales Ridge Water Quality Monitoring Network, Polk and Highlands Counties, FL** - Mr. Haber managed the SWFWMD portion of the cooperatively-funded Lake Wales Ridge Water Quality Monitoring Network that consisted of 31 surficial aquifer wells in the Lake Wales Ridge area. The US Geological Survey and the Florida Department of Agriculture and Consumer Services use the water quality data obtained through this program to track and monitor nutrient, pesticide, and herbicide groundwater contamination in this citrus-dense area of Southwest Florida.