

EDUCATION

M.S. The Pennsylvania State University. 1975. Geology/Hydrogeology

B.A. Millersville State College. 1973. Geology

Master's Paper: "The Geology and Water Resources, for Land-Use Planning, of Potter Township, Centre County, PA." An investigation of the geology and water resources of the study area was undertaken to aid the Potter Township Planning Commission in their development of a local land-use plan. The geology of the area was mapped by extensive field work and the use of aerial photographs. A map of the water table and directions of ground-water flow was prepared. Hydrogeologic data were used to develop a map showing potential well yields throughout the area. Maps depicting potential sources of water pollution and areas of water-pollution risks were compiled on the basis of soil and rock characteristics and the present land use.

Continuing Education:

- The Pennsylvania State University. 1976. "Basic Mechanics of Solid Waste."
- The Pennsylvania State University. 1977. "Sanitary Landfills and Land Disposal Technology."
- The Pennsylvania State University. 1977. "Technical Elements of Coal Surface Mining and Land Reclamation."
- The Pennsylvania State University. 1979. "Fundamentals of Water Pollution Control in Coal Mining."
- University of Wisconsin. 1982. "Modelling Pollutant Movement in Groundwater."
- National Ground Water Association. 1990. "Environmental Site Assessments in Conjunction With Real Estate Transactions."
- National Ground Water Association. 1991. "Designing In-Situ Waste Recovery Systems."
- PA Rural Water Association. 1992. "Wellhead Protection Workshop."
- National Ground Water Association. 1996. "Probability, Statistics and Geostatistics for Environmental Professionals."

- PA Department of Environmental Protection. 1998. "Workshop on Pennsylvania's Land Recycling Program, Act 2."
- PA Department of Environmental Protection. 2003. "Land Recycling Program Client Workshop."
- National Ground Water Association. 2005. "Artificial Recharge of Ground Water."
- PA Department of Environmental Protection. 2009. Training Workshops for the gas well drilling industry
- American Business Conferences. 2010. "Examining Cutting Edge Technologies and Best Practices to Optimize Water Sourcing, Maximize Re-Use, And Efficiently Manage Flowback Water in Shale Gas Production."

Certification:

- NUS Corporation. "Fundamentals of Hazardous Waste Site Activities-Health, Safety and Operations Training Course" (40 hours). July 1987. Pittsburgh, Pennsylvania.
- Waste Site Worker Supervisory Training in Accordance with 29CFR 1910.120(e)(4). April 27, 2001.
- Hazardous Waste Site Worker Refresher Training (8 hours annually) in accordance with 29CFR 1910.120(e)(8), State College, PA.
- Mine Safety Training in Accordance with MSHA 30CFR Part 46, Training/Retraining of Miners. May 31, 2002, plus annual Miner Refresher Course.
- American Safety and Health Institute Approved Basic First Aid and Adult CPR Certification, plus annual re-certification.
- Permit-Required Confined Space Training, Including Entrant, Attendant and Supervisor Non-Entry Rescue. August 2, 2004.

EXPERIENCE

April 2001 to present: *Secretary-Treasurer and Principal Hydrogeologist, Meiser & Earl, Inc., State College, Pennsylvania.* Same responsibilities as Senior Hydrogeologist, plus additional management duties.

June 1999 to April 2001: *Senior Hydrogeologist, Meiser & Earl, Inc., State College, Pennsylvania.* Same responsibilities as Project Hydrogeologist, plus additional supervisory and management duties.

December 1984 to June 1999: *Project Hydrogeologist, Meiser & Earl, Inc., State College, Pennsylvania.* Responsible for preparing proposals, meeting with clients and regulatory personnel, supervising geologists, and completing various hydrogeologic projects including:

Waste Disposal and Soil/Ground-Water Contamination

- conducting hydrogeologic investigations and preparing permit applications for proposed municipal, industrial, construction-and-demolition, and residual waste landfills;
- preparing permit applications for utilizing sludge for strip mine restorations;
- designing and supervising installation of ground-water monitoring programs;
- supervising terrain conductivity studies and monitoring well installations at hazardous waste sites;
- conducting ground-water assessment programs for hazardous waste sites in accordance with RCRA regulations, including development of assessment plans, performance of all aspects of field work to determine ground-water quality and rates and directions of ground-water flow, design of ground-water abatement plans and preparation of final reports;
- investigating and supervising cleanup of ground water contaminated by petroleum products;
- performing closure activities for hazardous waste lagoons, including soil sampling and preparation of post-closure permit applications;
- performing hydrogeologic studies to define ground-water flow systems for various types of ground-water contamination problems;

Water-Supply Development

- conducting regional studies for surface-water and ground-water supplies for natural gas well drilling and development (hydrofracturing);
- preparing permit applications for submittal to the PA Bureau of Oil and Gas Management and the Susquehanna River Basin Commission for surface-water withdrawals for gas well development;
- performing feasibility studies for development of municipal, industrial, and residential water-supply wells;

- locating high-yield well sites using fracture-trace analysis;
- preparing well specifications, supervising the drilling and test pumping, sampling water quality, and analyzing pumping test data to determine long-term yields of municipal and industrial water-supply wells;
- preparing hydrogeologic reports and ground-water withdrawal applications for submittal to the PA Department of Environmental Protection and the Susquehanna River Basin Commission for permitting municipal, industrial, commercial, and institutional water-supply wells;
- evaluating pumping test data to determine hydraulic characteristics of aquifers;
- delineating wellhead protection areas;
- conducting field work and completing hydrogeologic sections of permit applications for bottled water systems utilizing spring and/or well sources;

Mining Hydrology

- reviewing hydrogeologic portions of coal surface-mine and deep-mine permit applications for the Maryland Bureau of Mines;
- investigating water-supply damage complaints related to coal surface mining and deep mining;
- conducting hydrogeologic investigations and preparing permit applications for rock and sand-and-gravel quarries;

Land Development

- evaluating potential impacts of sinkholes on proposed residential developments; and
- evaluating impacts of proposed on-lot septic systems on ground-water quality.

March 1976 to December 1984: Consulting Hydrogeologist, Todd Giddings and Associates, Inc. State College, Pennsylvania. Project manager and senior hydrogeologist responsible for preparing proposals, supervising other hydrogeologists and completing various hydrogeologic projects. Performed site feasibility studies and prepared permit applications for solid waste disposal sites, including lined and natural-renovation municipal waste landfills, industrial waste landfills, coal refuse disposal sites, fly-ash disposal sites and demolition debris disposal sites. Conducted hydrogeologic studies and permit work for industrial waste lagoon sites and spray

irrigation sites for effluent disposal. Evaluated sites for sludge utilization for restoration of strip mine areas and prepared permit applications for same. Designed and supervised drilling programs, including auger borings, split-spoon sampling, core drilling, monitoring wells, piezometers, municipal water-supply wells and soil permeability tests. Performed and analyzed pumping tests of wells to determine yield, water quality, well performance and aquifer hydraulic characteristics. Chose sites for domestic, industrial, institutional and municipal water-supply wells by utilizing hydrogeologic evaluation and fracture-trace analysis. Prepared preliminary erosion and sedimentation control plans for sanitary landfills and sludge disposal sites. Prepared environmental assessments for waste disposal sites. Conducted hydrogeologic studies and prepared mine-drainage permit applications for proposed coal strip mines. Performed hydrogeologic studies on the effects of quarrying and coal mining on water supplies and on ground-water quality and ground-water flow systems. Investigated incidents of ground-water contamination from underground storage tanks, landfills, waste impoundments, and other sources.

1975: Graduate research assistant, The Pennsylvania State University. Participated in a study of the water resources of Spring Creek Basin, Centre County, Pennsylvania, by maintaining a network of ground-water-level recorders.

1973 to 1975: Graduate teaching assistant at The Pennsylvania State University for laboratory sections of physical geology and historical geology.

PROFESSIONAL AFFILIATIONS

- National Ground Water Association, Association of Ground Water Scientists and Engineers

PROFESSIONAL REGISTRATION

Commonwealth of Pennsylvania Registered Professional Geologist, No. PG-0463-G
Wyoming Board of Registration for Professional Geologists, No. PG-1434