

## **EDUCATION**

Ph.D. University of Arizona. 1973. Hydrogeology and Engineering Geology.

M.S. University of Connecticut. 1966. Hydrogeology.

B.A. University of Connecticut. 1963. Geology.

Ph.D. Dissertation: "A Hydrogeologic Study of an Unstable Open-Pit Slope, Miami, Gila County, Arizona." Research involved statistical analysis of the factors causing slope failures in an open-pit mine, following which a rise in ground-water levels was determined to be the dominant cause for a large rock slope failure. A steady-state finite element model of the ground-water flow system was developed, enabling permeabilities to be approximated. These data were then used to design a dewatering program to enhance slope stability, and the allowable steepening under dewatering conditions was computed with a mathematical model.

### Continuing Education:

- University of Waterloo - "DNAPLs in Fractured Geologic Media: Behavior, Monitoring and Remediation." November 10-12, 1997.
- University of Waterloo - "Field Methods in Contaminant Hydrogeology." April 26-30, 1982.
- University of Ottawa - "Application of Finite Elements to Groundwater Hydrology." Apr. 15-17, 1970.

### Certification:

- Hygiene, Safety and Training, Inc. "Hazardous Waste Site Worker Protection Training Course" (40 hours). April 1988. State College, 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.

## **EXPERIENCE**

April 2001 to present: *Senior Consultant, Meiser & Earl, Inc., State College, Pennsylvania.*  
Same as below.

October 1985 to April 2001: *President, Meiser & Earl, Inc., State College, Pennsylvania.*

Completed projects including:

- conducting numerous site investigations and reviews for municipal, industrial, residual and hazardous solid-waste disposal in eleven states;
- completing geologic mapping and hydrologic investigation to define ground-water flow systems for numerous contamination cases;
- locating, preparing specifications, supervising drilling and test-pumping, sampling and analyzing high-yield municipal and industrial water supply wells;
- defining acid mine drainage contamination and identifying source(s);
- locating many domestic water wells;
- completing hydrogeologic permit investigations for surface and underground coal mines;
- determining safe yield for a municipal reservoir watershed;
- investigating and remediating gasoline and chemical spills;
- designing and installing numerous ground-water monitoring systems;
- reviewing surface and deep mine permit applications for Maryland DNR;
- conducting mine blasting damage assessment on water wells;
- evaluating construction impacts on water supplies; and
- testifying as an expert witness in numerous environmental hearings and trials.

March 1976 to October 1985: *Partner, Meiser & Earl / hydrogeologists, State College, Pennsylvania.* Same as above.

February 1972 to February 1976: *Project Hydrogeologist, Todd Giddings and Associates, State College, Pennsylvania.* Responsible for proposal preparation, planning, coordination and supervision of a wide variety of ground-water geology and engineering geology projects, including: water-supply development studies which included location, drilling supervision, test pumping, and analysis for numerous high-yield wells; investigation of many solid-waste disposal sites, among them large rail-haul sites and lined sites; spray irrigation sites for liquid wastes; industrial-waste impoundment sites; permit application studies for large underground and surface coal mines; mine-drainage investigations; contamination studies including use of tracer analyses; a flood control feasibility study; and soils and foundation studies. Testified as expert witness in state environmental hearings (Pennsylvania and Maryland).

Summers 1969, 1970: *Geologist, Miami Copper Company, Miami, Arizona*. Conducted dissertation research and mining-data collection on unstable slopes in open-pit copper mine.

Summers 1967, 1968: *Watershed Planning Party Geologist, Soil Conservation Service, Reno, Nevada*. Prepared analyses and hydrogeologic maps of Truckee and Walker River Basins for basin-wide report. Assisted in preliminary site investigation for flood control dam in southeastern Nevada. Compiled data and analyses of ground-water resources of several basins in Nevada.

Summers 1965, 1966: *Research Assistant, Water Resources Institute, University of Connecticut, Storrs, Connecticut*. Developed experimental well fields in glacial deposits. Sampled sediments and analyzed textural parameters by computer techniques. Ran various types of pumping tests using observation-well networks.

1964 to 1970: *Teaching Assistant for physical geology, historical geology and geology for teachers' courses at Universities of Connecticut and Arizona*.

## PROFESSIONAL AFFILIATIONS

- National Ground Water Association, Association of Ground Water Scientists and Engineers
- Society of Mining Engineers of AIME
- American Geophysical Union
- Pennsylvania Mining Professionals - Director; 1983 President
- Pennsylvania Council of Professional Geologists - Director 1990-1997

## PUBLICATIONS

Earl, T.A. 1976. Strip Mine Restoration Through Solid Waste Disposal-Multiple Benefits and Economic Incentives. Society of Mining Engineers of AIME Transactions. Vol.260, no.2, pp.125-128.

Earl, T.A. 1979. The OSM Monitoring Program-Let's Be Realistic. National Ground Water Association Well Log. Vol.10, no.11, pp.24.

Meiser, E.W., Jr., T.A. Earl and R.M. Bodner. 1980. Leachate Collection Using the Ground-Water Flow System-a Landfill Case History in Central Pennsylvania. Proceedings of Third Annual Madison Conference of Applied Research and Practice on Municipal and Industrial Waste. Madison, Wisconsin. September 10-12, 1980. pp.214-227.

Earl, T.A. and E.W. Meiser, Jr. 1982. Use of Fracture Traces in Water Well Location: a Handbook. U.S. Dept. of the Interior OWRT TT/82 1. 55p.

Earl, T.A. 1983. Mine-Site Monitoring-a Systems Approach. Ground-Water Monitoring Review. Winter 1983. pp.52-56.

Earl, T.A. and E.W. Meiser, Jr. 1984. Use of Fracture Traces in Water Well Location. Proceedings of International Conference on Ground-Water Technology. Johannesburg, South Africa. NWWA/Borehole Water Association of South Africa. November 14-17, 1984. pp.341-364.

Earl, T.A. 1986. Flow System Considerations in Understanding Appalachian Coal Hydrology. Proceedings of Clarion University Coal Institute Conference on Depositional Environment and Coal Hydrology. Clarion, Pennsylvania. January 23, 1986. pp.49-67.

Earl, T.A. 1988. Professional Liability - a Difficult Personal Lesson. Proceedings of Association of Engineering Geologists Conference on Professional Liability and the Practicing Geologist. Baltimore-Washington-Harrisburg section. Frederick, Maryland. May 19-20, 1988. 15p.

## PROFESSIONAL REGISTRATION

Commonwealth of Pennsylvania Registered Professional Geologist, No. PG-0626-G  
Arkansas Board of Registration for Professional Geologists, No. 1727  
Delaware Board of Registration of Geologists, No. 267  
Virginia Board of Geology, No. 000389  
Georgia Board of Registration for Geologists, No. 1203  
Missouri Board of Geologist Registration, No. RG 0784

## SHORT COURSE INSTRUCTION

Short Course in Hydrogeology for Pennsylvania Department of Environmental Resources Hydrogeologists, prepared and presented by *Meiser & Earl, Inc.* May 5 - 7, 1981.

Pennsylvania State University Continuing Education - Hydrological Design for Surface Coal Mining. September 1980, August 1982, May 1983, May 1984 and September 1989.

Pennsylvania Rural Water Association - Well Head Protection Seminar. November 12, 1991.

Environment Committee of European Parliament. Presentation on Proposed Regulations for Disposal of Solid Waste in European Community Nations. May 1992.

Pennsylvania Mining Professionals - Workshop on Domestic Water Systems and Pumping Test Analyses. February 16, 1994.

Pennsylvania Rural Water Association - Ground-Water Workshop, "Hydrogeologic Settings." June 8 and October 19, 1994 and January 18, 1995.

Pennsylvania Department of Environmental Resources, Bureau of Mining and Reclamation. Workshop on Pumping Test Analyses and Piezometer Installation. October 14, 1994.

Department of Agriculture, Cooperative Extension Service with Pennsylvania State University. Workshop on "How Dumping Affects Soil and Water." March 20, 1996.

Pennsylvania Department of Environmental Protection, Waste Management Program. Workshop on Definition of Regional Water Table by Use of Soil Moisture Measurements. April 9, 1996.

Pennsylvania Council of Professional Geologists, "A Review of Geology for the Practicing Geologist and the Pennsylvania Professional Geologist Examination." 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, and 2006. Hydrogeology Lectures.

Dr. Earl also held teaching assistantships from 1964-1970 at Universities of Connecticut and Arizona for physical geology, historical geology and geology for teachers.