

December 2011

## **DONALD I. SIEGEL**

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### **EDUCATION**

University of Minnesota	Hydrogeology	1974-1981	Ph.D.
Penn State University	Geology	1969-1971	M.S.
University of Rhode Island	Geology	1965-1969	B.S.

### **EMPLOYMENT**

Full Professor	Syracuse University	1993-present
Senior Hydrogeologist	Stearns & Wheeler Consulting Engineers and Scientists	1985-1997
Hydrologist/Geochemist	U.S. Geological Survey	1976-1982
Geologist	Amerada Hess Corp.	1971-1973

### **PROFESSIONAL RECOGNITION**

**Laura J. and L. Douglas Meredith Professor**, Syracuse University, 2009-present.

**Lifetime National Associate Member**, The National Research Council (National Academy of Sciences), 2008

**The O.E. Meinzer Award In Hydrogeology**, Hydrogeology Division, Geological Society of America, 2005

**Wasserstrom Graduate Mentoring Prize**, Syracuse University, 2003

**Councilor of the Geological Society of America**, 2002-2005

**Distinguished Service Award**, Hydrogeologic Division, Geological Society of America, 2001

**Expert Witness to the United States Senate**, Subcommittee on Environment and Public Affairs, June 26, 1997

**Fellow**, Geological Society of America, elected 1995

**Birdsall Distinguished Lectureship in Hydrogeology**, Geological Society America, 1992-1993

**Chairman, National Water Science and Technology Board**, June 2010-present

Member National Water Science and Technology Board, **National Research Council**, 2007-present.

Committee on Techniques for Assessing Ground Water Contamination, **National Research Council, National Academy of Science**, 1991-1993.

Committee on Techniques for Wetland Delineation, **National Research Council, National Academy of Science**, 1993-1994.

Committee on U.S. Geological Survey Hydrologic Research: Regional Aquifer System Analysis, **National Research Council, National Academy of Science**, 1998-2000

Committee on U.S. Geological Survey Hydrologic Research: Water Use, **National Research Council, National Academy of Science**, 2000-2001

Committee on U.S. Geological Survey Hydrologic Research: Stream Information Program, **National Research Council, National Academy of Science**, 2001-2004

Chair, Committee on U.S. Geological Survey Hydrologic Research: River Science, **National Research Council, National Academy of Science**, 2002-2005

Committee on Groundwater Fluxes, **National Research Council, National Academy of Science**, 2002-2003.

Committee on River Science (Chair), **National Research Council, National Academy of Sciences**, 2003-2006.

Committee on the Future of USGS WRD, **National Research Council, National Academy of Sciences**, 2005-2008.

Committee on Environmental Impact of Coal-Gas Methane Production, **National Research Council, National Academy of Science** 2008-2010

Chair, Committee on 3rd Phase National Water Quality Assessment, **USGS, National Research Council, National Academy of Science** 2010-2013.

Committee on Global Sustainability, **National Research Council, National Academy of Science** 2011-2012..

**Book Editor, Geological Society of America**, 2007-2010

**Associate Editor, Hydrologic Processes**, 2006-2008

**Associate Editor, Geosphere**, 2005-2007

**Associate Editor, Geology**, 2005-2007.

**Associate Editor, Hydrogeology Journal**, 2005-present.

**Associate Editor, Water Resources Research**, 1993-1996; 2010-present

**Associate Editor, Wetlands**. 1995-1998

**Associate Editor, Ground Water**, 1997-2005.

**Editors' Citation for Excellence** in Refereeing - Water Resources Research, 1991

**Review Panelist** , Biogeochemistry program, National Science Foundation, 1995

## **TEACHING EXPERIENCE**

### **Syracuse University**

Hydrogeology (advanced undergraduate/graduate)  
Contaminant Hydrogeology and Geochemistry (graduate)  
Groundwater and Solute Transport Modeling (graduate)  
Hydrogeochemistry (graduate)  
Aqueous Geochemistry (graduate)  
Wetland Hydrology and Geochemistry (Graduate)  
Case Studies in Hydrogeology (graduate)

The Science of Water (undergraduate)  
World Water (undergraduate)

Physical Geology for Hydrogeologists (graduate)  
Earth Science (undergraduate)

Lecturer in Frontiers of Science Seminar Series, 1988, 1989  
Lecturer in Project Advance, 1988-1989

### Short Courses

Wetland Hydrogeology and Geochemistry, 1995, Short Course, Geol. Society of America  
Effective Teaching of Hydrogeology: How to Make the Best Use of Scant "Real World Data,"  
1996, 1999 (NE GSA) Short Course, Geol. Society of America

Applied Groundwater Geochemistry, Geol. Society of America, National Meeting 2000, 2002; MA and NY  
Dept. Natural Resources and Environmental Conservation, 1990-1994; Licensed Site  
Professionals Association of Mass (1999); Environmental Professionals of Connecticut, 2001;  
Central New York Association of Professional Geologists (1997). Geological Society of America  
National Meeting, 2002.

Tracer Methods in Hydrology, Licensed Site Professionals Association of Mass (1999); Environmental  
Professionals of Connecticut, 2007; Central New York Association of Professional Geologists (2005).  
Visual Modflow Groundwater Modeling for Managers, City of New York Dept. Environmental Protection,  
1999

Pesticide Transport and Fate, Montana Department Environmental Quality, 2000  
Succeeding in Academia (2001), Association of Women Geologists and Geol. Soc. American, 2001  
Co-Chair, Teaching Hydrogeology in the 21<sup>st</sup> Century, NSF Workshop, Lincoln, Neb., psring 2006

### ADVISING

Masters of Science Students (Current employment/status)

1. David Chason—Peat Material Properties (High School Teacher)
2. Kristen Franz-Begor—Paleohydrogeochemistry Sandstone Aquifer, Wisconsin (Consultant)
3. Dave Boldt—3-D Groundwater Flow Model Lost River Peatland, MN (U.S. Geological Survey)
4. Gerry Gould—3-D Groundwater flow model bedrock aquifers SW NY (Consultant)
5. Robert Sustokowski—Medina Fm. Brine Geochemistry (Consultant)
6. Anne Veeger—Hydrogeology of Tug Hill Aquifer, NY (Professor Univ. Rhode Island)
7. Anna Martini—Trace element geochemistry of brines (Professor Amherst College)
8. Brenda Lint—Hydrogeologic atlas, Oneida County, NY (Environmental Regulator, State of Texas)
9. Marian Bernt—Trace metals in oil contaminated aquifer substrate (U.S. Geological Survey)
10. Christine Gachowski—Acid rain buffering (Consultant)
11. Mary Lou Perkins—Hydrogeology of Beaver Lake, NY (Upstate Freshwater Institute, NY)
12. Steve Winkley—Hydrogeologic Atlas of Onondaga County, NY  
(Environmental Regulator, State of New York)
13. Rick Noll—Hydrogeochemistry of the Lockport Dolomite, Niagara Falls NY (Consultant)
14. John Noble—Hydrogeochemistry of Onondaga County, NY (Consultant)
15. Barbara Hill—Trace metals in peat, Lost River Peatland, NY (PhD Student, SU)
16. Nan Rutkowski (ESF)—trace metals in peat, Glacial Lake Agassiz Peatlands, MN (Environmental  
Regulator, State of New York)
17. Phil Bennett (ESF)—Organic- silica interactions and surface chemistry (Professor, Univ. Texas)
18. Dan Jenkins (ESF)—Isotopic geochemistry in Nepal ground water (Consultant)
19. Jim McNamara—Hydrogeology of Malloryville Wetlands, NY (Boise State)
20. Karen Goldenburg—Geochemical Simulation of Groundwater Mixing Models (Consultant)
21. Yiping Shen—Geochemistry of peatland waters (Owner of consulting company)
22. Dan Verillo—Geochemistry of fracture fillings in Lockport Dolomite (Consultant)
23. Kathy Fergeson—Geochemical evaluation of groundwater flow system, Manlius, NY (Exxon)
24. Dan Ours—Dilation in peat (Consultant)
25. Dave Lipson—Ternary diagram approaches in BTEX solute transport (Consultant)
26. Matt Erbe—Ternary diagram approaches in solvent solute transport (Consultant)

28. Susannah Kitchens--Hydrogeology of Okeefenokee Swamp (Model—sometimes this happens)
29. Monica Coyne--Wetland remediation of nutrients (High School teacher)
30. Pat Korths--Trace metals in peat, northern MN (Consultant)
31. Larae Mishler--CATSCAN visualization of peat porosity (Consultant)
32. Jeff McKenzie--Solute transport in peatlands and methanogenesis in peatlands
33. Leskniak, Keri--geochemistry of the Saratoga Springs (Exxon-Mobile)
34. John Bartos--dedolomitization and modeling ground water (Consultant, GES)
35. Mark Flusche-paleohydrology of Andean lakes (in progress)
36. Amanda Baudauf--Geochemistry of Regional Groundwater flow systems western New York ( IBM)
37. Edward Epp--Onondaga Brine ( Virginia DNR)
38. Nick Azzolina--Catskill wetland water quality (RETEC, NY)
39. Nate Krane--Hyperheic zone interaction (OBG, NY)
40. Jessica Meets (Karst Hydrology)
41. Melody Kight (with T. Endreny SUNY, Shale bed methane)
42. Zeno Levy (with Richard Smardon SUNY, peatland hydrology)
43. Xi Chen (shale bed methane)

PhD. (Current position/status)

1. Phil Bennett—Silica organic complexes (Prof. Univ. Texas)
2. Ed Romanowicz—Methane in peatlands (Prof. SUNY Plattsburgh)
3. Andy Reeve—Peatland hydrogeological and solute transport modeling (Prof. Univ. Maine)
4. Jennifer Rivers--Nutrient cycling in peatlands, carbon budgets (Prof. Northeastern Univ.)
5. Martin Otz—Natural organics in wetlands and lakes (Consultant, ERM)
6. Jeff McKenzie---modeling heat flow in wetlands (McGill University)
7. Laura Lautz--Riparian arid wetlands (SUNY-ESF)
8. Li Jin (hyporheic interaction--Oxford University)
9. Mimi Sarkar (nutrients in wetlands, University Pittsburgh)
10. Xiangyu Mu (lake groundwater interaction, in progress)

Advisor to ~150 undergraduate students over the years

**PROFESSIONAL SOCIETY MEMBERSHIP**

- Geological Society of America (1980's to present)
- American Geophysical Union (1980's to present)
- Association of Wetland Scientists (1990-1997)
- National Groundwater Association (1980's to present)
- Geochemical Society (1982-1990)
- American Association for Advancement of Science (2003-2006)

**RESEARCH SUPPORT**

1. Hydrogeology and Geochemistry of a Raised-bog Complex, Glacial Lake Agassiz Peatlands, State of Minnesota, \$10,408 awarded, June 1982-December 1983.
2. Origin of Sedimentary Witherite ( $\text{BaCO}_3$ ), Senate Research Committee of Syracuse University, \$3,850, July 1, 1984.
3. IPA Agreement: Regional Aquifer-Systems Analysis (RASA) and Hazardous Waste Hydrology Programs. U.S. Geological survey, \$23,854, June 1984-June 1986; June 1989.
4. The effect of Pleistocene glaciation on formation-water chemistry and migration of oil, southern New York and northwestern Pennsylvania, Petroleum Research Fund, \$30,230, October 1985-October 1987.

5. The Hydrogeology of Onondaga County, New York. Onondaga Environmental Management Council, \$15,000, June 1, 1987-June 1, 1988.
6. The Effect of Organic Acids on the Solubility of Quartz. Petroleum Research Fund, \$35,000, September 1, 1987-September 1, 1989.
7. The Geochemistry of Ground Water in Bedrock Formations, Niagara Falls, New York. U.S. Geological Survey, \$165,094, January 1, 1987-December 30, 1991.
8. Trace Metal Retention and Transport in Mineral Soils Impacted by Leachate Application to Wetlands, U.S. Geological Survey, \$20,000, May 1989-May 1992.
9. Upstate Freshwater Institute Fellowship, \$5,750, 1989.
10. Intergovernmental Personnel Agreement, U.S. Geological Survey, \$5,000, 1989.
11. Mechanisms controlling the production and transport of gases and solutes within a large boreal peat basin, Department of Energy, \$466,608, June 1990-June 1993.
12. Two major peat basins in boreal America: sources, sinks or steady-state reservoirs in the global carbon cycle? NSF, \$256,127, June 1990-June 1993.
13. Geochemical controls over heavy metal contamination in ground water associated with the FreshKills Landfill, Wehren Engineering, \$81,400, February 1991-February 1993.
14. Determination of substrate stratigraphy and depth to bedrock under peatland landforms, NSF, \$28,522, (NSF Research Opportunity Award (ROA), June 1992-June, 1993.
15. Transient changes in methane storage and transport, Glacial Lake Agassiz Peatlands, DOE, \$380,000, June 1993-June 1995.
16. Collaborative Research: Hydrogeologic Drivers for the Carbon Dynamics in Large PeatlandsNSF-DEB-9615429, \$158,702,04/01/1997-03/31/2002
17. Evaluation of sewage galley systems in Putnam County, Department of Environmental Protection, City of New York, \$242,000, September 1997-June, 2000.
18. East of Hudson Terrestrial Process Studies, Department of Environmental Protection, City of New York, \$140,0,000, January 1999-June 2003;
19. Terrestrial Process Studies, Research Foundation State of New York, \$82,000, 2000-2003
20. Ocean Drilling Program Leg 195,NSF, \$40,000, May 15, 2001- August 15, 2003
21. Monitoring Wetlands in the Catskill Region, EPA, \$101,647, October 15, 2003-October 15, 2005
22. Fate and Transport of Salt Contamination in the Surficial Aquifer Near Alder Creek (NY, Gilbert & Ildiko
23. Butler Foundation, April 1, 2003 to March 31, 2006, \$7,670.00
24. Water flux and nitrogen cycling in the hyporheic zones of a semi-arid watershed: Hydrologic and geomorphic driving forces in a transitional climate, NSF, \$744,069 , 2005-2008.
25. An integrated hydrology, geochemistry and geophysics module for geoscience field camps, \$60,000, NSF to the University of Missouri (Branson Field Camp, 2005-2007.

26. Investigating Earth Science in Urban Schoolyards: An Outreach and Professional Development Model for Elementary Schools, NSF, \$62,567
27. Collaborative Research: An Interdisciplinary Investigation of Groundwater-Carbon Coupling in Large Peat Basins and its Relation to Climate Change, NSF, 2006-2012,\$400,000
28. Topical Studies on Formation Fluids Western China, Private funding, \$200,000.

## REFEREED PUBLICATIONS

### Books:

1. National Research Council, 1994, **Groundwater Vulnerability Assessment**, National Academy Press 204p.
2. National Research Council, 1995, **Wetland Characteristics and Boundaries**, National Academy Press 306p.
3. National Research Council, 2000, **Investigating Groundwater Systems on Regional and National Scales**, National Academy Press, 143p.
4. National Research Council, 2003, **Water Use Science: Improving The Water Use Program of the U.S. Geological Survey**, National Academy Press, 210p..
5. National Research Council, 2003, **Groundwater Fluxes across Interfaces**, National Academy Press, 76p.
6. National Research Council, 2004, **Assessing the National Streamflow Information System**, National Academy Press, 176p.
7. National Research Council, 2006, **River Science at USGS**, National Academy Press, 206p.
8. **Siegel, D.I.**, 2006 "*From Lokshen to Lo Mein: The Jewish Love Affair with Chinese Food.*" Gefen Press, Jerusalem and New York.

### Articles (By Year)

1. Olcott, P.G. and **Siegel, D.I.**, 1979, Physiography and surficial geology of the copper-nickel study region, northeastern Minnesota: U.S. Geological Survey Water-Resources Investigations 78-51, 22 p.
2. **Siegel, D.I.** and Winter, T.C., 1979, Water balance of Williams Lake, north-central Minnesota, U. S. Geological Survey Professional Paper 107.
3. **Siegel, D.I.** , 1979, Potential hydrologic effects of peat mining in the Red Lake Peatlands, North-Central Minnesota--a project plan, U.S. Geological Survey Open File Report 79-1591,
4. **Siegel, D.I.**, 1980, Method of logging holes drilled by the rotary method: Water Resources Division Bulletin, January-March, 1980, U.S. Geological Survey, Reston, Virginia, p. 47-49.
5. **Siegel, D.I.** and Ericson, D.W., 1980, Hydrology and water quality of the copper-nickel study region, northeastern Minnesota: U.S. Geological Survey Water-Resource Investigations, 80-739, 87 p.

6. **Siegel, D.I.** and Winter, T.C., 1980, Hydrologic setting of Williams Lake, north-central Minnesota: U.S. Geological Survey Open-File Report 80-403, 55 p.
7. **Siegel, D.I.**, 1981a, Hydrogeologic setting of the Glacial Lake Agassiz Peatland, northern Minnesota: U.S. Geological Survey Water-Resources Investigations 81-24, 32 p.
8. **Siegel, D.I.**, 1981b, Effect of snowmelt on the water quality of Filson Creek and Omaday Lake, northeastern Minnesota: Water Resources Research, Vol. 17, p. 238-242.
9. **Siegel, D.I.**, 1981, Hydrogeochemistry and kinetics of silicate weathering in a gabbroic watershed, Filson Creek, northeastern Minnesota: Ph.D. Thesis, University of Minnesota, 275 p.
10. Guswa, J.H., **Siegel, D.I.**, and Gillies, D.G., 1982, A Preliminary evaluation of the ground-water-flow system, Twin Cities metropolitan area: U.S. Geological Survey Water-Resources Investigations Report 82-44, 70 p.
11. **Siegel, D.I.**, 1983a, Groundwater and evolution of the Glacial Lake Agassiz: Journal of Ecology, vol. 71, p. 913-921.
12. **Siegel, D.I.**, 1983b, Review of: Isotope Studies of Hydrologic Processes (Eds. E.D. Perry and C.W. Montgomery), EOS, vol. 64, p. 430.
13. **Siegel, D.I.**, 1983c, The effect of snowmelt on the quality of Filson Creek and Omaday Lake, northeastern Minnesota, U.S. Geological Survey Water Resources Investigations 81-66, 82 p.
14. **Siegel, D.I.**, Anderson, L.E., and Rogalla, J.A., 1983, Preliminary evaluation of methods for determination of sulfate concentrations in precipitation and other dilute solutions, In: Siegel, 1983c.
15. Carter, Virginia P.; chairperson; Winter, Thomas C. ; Novitzki, Richard P. ; Hollands, Garrett G. ; Lejcher, Terry ; O'Brien, Arnold ; **Siegel, D. I.** ; Straw, Thomas ; Bartow, Nancy C. 1984, Proceedings of the National wetland valuesassessment workshop, 17-28, U.S. Department of Interior, Fish and Wildlife Service, Washington, DC, United States
16. Mullins, H.T., Land, L.S., Wise, S.W., Jr., **Siegel, D.I.**, Masters, P.M., Hinchey, E.J. and Price, K.R., 1985, Authigenic dolomite in Bahamian slope sediment, Geology, vol. 13, p. 292-295.
17. Mullins, H.T., Wise, S.W., Jr., Gardulski, A., Hinchey, E.J., Masters, P.M. and **Siegel, D.I.**, 1985, Shallow subsurface diagenesis of late Pleistocene Peri-platform ooze: northern Bahamas, Sedimentology, vol. 32, p. 473-494.
18. **Siegel, D.I.**, and Franzi, D.A., 1984, The inorganic geochemistry of groundwater and sediments in an aquifer contaminated by crude petroleum, Bemidji, Minnesota: Project plan and preliminary results, U.S. Geological Survey Water Resources Investigation 84-4188, p. 87-96.
19. **Siegel, D.I.** and Pfannkuch, H.O., 1984a, Silicate mineral dissolution at pH 4 near standard temperature and pressure, Geochimica et Cosmochimica Acta, vol. 48, p. 197-201.
20. **Siegel, D.I.** and Pfannkuch, H.O., 1984b, Silicate dissolution influence on Filson Creek chemistry, northeastern Minnesota: Geological Society of America Bulletin, vol. 95, p. 1446-1453.
21. **Siegel, D.I.**, and Livermore, D., 1984, Chloride transport in the Mississippi River System, Water Resources Bulletin, vol. 20, p. 503-509.

22. **Siegel, D.I.** and Mandle, R.J., 1984, Isotopic evidence for glacial meltwater recharge to the Cambrian-Ordovician aquifer, north-central United States, *Quaternary Research*, vol. 22, p. 328-335.
23. Chamberlain, S.C., Dossert, W.P. and **Siegel, D.I.**, 1986, A new paragenesis and new localities for the barium carbonate, witherite, *Canadian Mineralogist*, vol. 24, p. 79-90.
24. Chason, D.B. and **Siegel, D.I.** 1986, Hydraulic conductivity and related physical properties of peat, Lost River Peatland, northern Minnesota, *Soil Science*, vol. 42, p. 91-99.
25. **Siegel, D.I.**, 1986, Review: Water, by Felix Franks, Heyden & Sons, Phila., Pa., *Water Resources Bulletin*, vol. 22, p. 145.
26. **Siegel, D.I.**, Baedecker, M.J. and Bennett, P., 1986, The effect of biodegradation of oil on the inorganic chemistry of ground water, In: *Proceedings of the 6th International Water-Rock Symposium*, Reykjavik, Iceland, p. 524-527.
27. Young, H.L., **Siegel, D.I.**, Mandle, R.J. and Kontis, A.L., 1986, Northern Midwest Regional Aquifer System Study, In: *Regional Aquifer System Analysis Program of the U.S. Geological Survey Summary of Projects, 1978-84*, Ed. Ren Jen Sun, U.S. Geological Survey Circular 1002, p. 72-87.
28. Bennett, P. and **Siegel, D.I.**, 1987, Enhanced dissolution of quartz by dissolved organic carbon, *Nature*, vol. 326, p. 684-686.
29. **Siegel, D.I.** 1987a, Review of: Ecological Considerations in Wetlands Treatment of Municipal Wastes, Ed. P.J. Godfrey et al., Van Nostrand Reinhold Company, *Water Resources Bulletin*, Vol. 22, p. 1056-1057.
30. **Siegel, D.I.**, 1987b, Review of the recharge-discharge function of wetlands, In: *Ecology and Management of Wetlands*, Crown Helm Ltd., UK, p. 59-66.
31. **Siegel, D.I.**, 1987c, Geochemical facies and mineral dissolution, Bemidji, Minnesota Research Site, U.S. Geological Survey Water Open File Rept. 87-109, c13-c15.
32. **Siegel, D.I.**, and Glaser, P.H., 1987, Groundwater flow in a spring-fen, raised-bog complex, Lost River Peatland, Northern Minnesota, *Journal of Ecology*, vol. 75, p. 743-754.
33. Bennett, P., Melcer, M.E., **Siegel, D.I.**, and Hassett, J.P., 1988, The dissolution of quartz in dilute aqueous solutions of organic acids at 25 C, *Geochimica Cosmochimica Acta*, vol. 52, p. 1521-1530.
34. Gould, G. and **Siegel, D.I.**, 1988, Theoretical simulation of groundwater flow in hydrocarbon-producing bedrock formations, southwestern New York-northwestern Pennsylvania, *Water Resources Bulletin*, vol. 24, p. 671-676.
35. **Siegel, D.I.** and Jenkins, D.T., 1987, Isotopic analysis of groundwater flow systems in a wet alluvial fan, southern Nepal, In: *Isotope Techniques in Water Resources Development*, International Atomic Energy Agency, p. 475-482.
36. **Siegel, D.I.**, Chamberlain, S.C. and Dossert, W.P., 1987, The isotopic and chemical evolution of mineralization in septarian concretions: Evidence for episodic paleohydrogeologic methanogenesis, *Geological Society of America*, vol. 99, p. 385-394.
37. **Siegel, D.I.**, Bennett, P.C., Baedecker, M.J., Berndt, M.P. and Franzi, D.A., 1988, The inorganic geochemistry of groundwater and aquifer matrix, Bemidji Toxic Waste Research Site, northern Minnesota: First Year Results U.S. Geol. Survey Open-File Rept. 86-481, p. c17-c212.



38. **Siegel, D.I.**, 1988, The recharge-discharge function of wetlands near Juneau, Alaska: Part I. Hydrologic investigations, *Journal of Ground Water*, vol. 26, p. 427-435.
39. **Siegel, D.I.**, 1988, The recharge-discharge function of wetlands near Juneau, Alaska: Part II. Geochemical investigations, *Journal of Ground Water*, vol. 26, p. 580-596.
40. **Siegel, D.I.**, 1988, Evaluating Cumulative Effects of Disturbance on the Hydrologic Function of Bogs, Fens, and Mires, *Environmental Management*, vol. 12, p. 621-626.
41. Baedecker, M.J., **Siegel, D.I.**, Bennett, P.C., Cozzarelli, I.M., 1989, The Fate and Effects of Crude Oil in a Shallow Aquifer: Distribution of Chemical Species and Geochemical Facies, U.S. Geol. Survey Water Resources Investigations 88-4220, Chapter A, p. 1-20.
42. Bennett, P.C. and **Siegel, D.I.**, 1989, Silica-organic complexes and enhanced quartz dissolution in water by organic acids, In *Proceedings, 6th International Symposium on Water-Rock Interactions*, Bath, England, p.89-91.
43. Loveley, D.R., Baedecker, N.J., Phillips, E.J.P., Cozzarelli, I.M., Lonergan, D.J., and **Siegel, D.I.**, 1989, Oxidation of aromatic contaminants coupled to microbial iron reduction, *Nature*, vol. 339, p. 297-300.
44. **Siegel, D.I.**, 1989, The hydrogeochemistry of the Cambrian-Ordovician aquifer system, north-central United States, U.S. Geol. Survey Prof. Paper, 1405-D, 76 p.
45. **Siegel, D.I.** and Begor-Franz, K., 1989, The Geochemistry of the Sandstone Aquifer, eastern Wisconsin, In: *Regional Aquifer Systems of the United States*, American Water Resources Association, Monograph Series 13, p. 73-83.
46. Young, H.L., Mandel, R.J., Kontis, A. L. and **Siegel, D.I.**, 1989, The Cambrian-Ordovician Regional Aquifer systems in the northern Midwest--a summary, In *Regional Aquifer Systems of the United States*, American Water Resources Association, Monograph Series No. 13, p. 5-37.
47. **Siegel, D.I.**, 1990, Sulfur isotopic evidence for regional recharge of saline water during continental glaciation, north-central United States, *Geology*, vol. 18, p. 1054-1056.
48. **Siegel, D.I.**, Stoner, D., Brynes, T. and Bennett, P., 1990, A geochemical process approach towards evaluating ground-water contamination, *Ground Water Management*, Number 2, National Water Resources Association, p. 1291-1301.
49. **Siegel, D.I.**, *Groundwater Chemistry*, a chapter in: Young, H., 1990, *The hydrogeology of the Cambrian-Ordovician aquifer system of the north-central United States*: U.S. Geological Survey Professional Paper 1405-A
50. **Siegel, D.I.**, Frape, S.K., Martini, A., Drimmie, R., and Thomas, R., 1990, Trace metal contamination of the Great Lakes by natural ground-water discharge: a first approximation, In *Proceedings Symposium on International and Boundary Water Resources Issues*, American Water Resources Association, p. 605-615.
51. Bennett, P.C., **Siegel, D.I.**, Hill, B.M., and Glaser, P.H., 1991, The fate of silicate minerals in a peat bog, *Geology*, vol. 19, p. 328-331.
52. Brynes, T., **Siegel, D.I.**, and Stoner, D.W., 1991, Evaluation of groundwater quality data: useful tools for the groundwater professional, *Ground Water Management*, vol. 7, p. 825-837.
53. Hill, B.M. and **Siegel, D.I.**, 1991, Ground-water flow and the metal content of peat, *Journal of Hydrology*, vol. 123, p. 211-224.

54. Glaser, P.H., Janssens, J.A., and **Siegel, D.I.**, 1991, Response of vegetation to hydrological and chemical gradients in the Lost River Peatland, northern Minnesota, *Journal of Ecology*, vol. 78, p. 1021-1048.
55. **Siegel, D.I.**, 1991, Evidence for dilution of deep, confined, ground water by vertical recharge of isotopically heavy Pleistocene water, *Geology*, v. 19, p. 433-436.
56. **Siegel, D.I.**, and Glaser, P.H., 1991, Mechanisms controlling the production and transport of methane, carbon dioxide, and dissolved solutes within a large boreal peat basin, Department of Energy Research Summary, No. 11, June, 1991, 4 pp.
57. **Siegel, D.I.**, Szustakowski, R., and Frape, S., 1991, A regional evaluation of brine mixing in the Albion Group (Silurian) sandstones of New York, Pennsylvania, and Ohio, *Bull. Petrol. Geoch. Explor.*, vol. 6, p. 66-78.
58. **Siegel, D.I.**, Byrnes, T., and Stoner, D.W., 1991, Mobilization of heavy metals and trace elements from landfill cover material and substrates, *Ground Water Management*, vol. 7, p. 971-988.
59. McNamara, J.P., **Siegel, D.I.**, Glaser, P.H., & Beck, R.M., 1995, Groundwater and vegetation relationships in the Malloryville Wetlands: Implications for hydrogeologic control over peatland succession, *Journal of Hydrology*, vol. 140, p. 279-296.
60. **Siegel, D.I.** 1992, Discussion of "Geochemical Evolution of the Cambrian-Ordovician Aquifer, Eastern Wisconsin: 1. Major Ion and Radionuclide Distribution," by T.R. Weaver and J. M. Bahr, May-June 1991 issue, v.29, no.3, p. 350-356, and "Geochemical Evolution of the Cambrian-Ordovician Sandstone Aquifer, Eastern Wisconsin: 2. Correlation Between Flow Paths and Ground-Water Chemistry," by T. R. Weaver and J. M. Bahr, July-August 1991 issue, v.29, no. 4, p 510-515, *Ground Water*, v.30, p.273-275.
61. **Siegel, D.I.**, McFarland, W. and Brynes, T., 1992, Geochemical cause of scaling in air stripping of volatile organic compounds, In: Proceedings National Groundwater Association Petroleum and Hydrocarbon Annual Conference, Houston, TX.
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### **Abstracts of Papers Presented (Alphabetical)**

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- 137. Siegel, D.I.** and McKenzie, 2005, J.M., Using geochemistry to assess well-head protection in arid southern Ethiopia, abst. National GSA Meeting in Salt Lake City
- 138. Siegel, D.I.**, Glaser, P.H., Chanton, J.P. Chasar, L.S., and Rosenberry., D.O., 2004, Methane Production and the hydrogeology of Peatlands, Geological Society of America Annual Meeting, Denver, Abstracts with Programs ,vol. 36, p.188, invited
- 139. Siegel, D.I.** and Bauer, B., 2004, The Rocks Rediscovered: Field Geology and the Hydrogeologist, Geological Society of America Annual Meeting, Denver, Abstracts with Programs vol. 36, p. 162. Invited.
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- 142. Siegel, D.I.**, 1979 (Abst.), Sulfate contribution from snowmelt to Filson Creek Watershed, Northeastern Minnesota, Spring Meeting, American Geophysical Union, Washington D.C., June 1, 1979, EOS, vol. 60, p. 258-259.
- 143. Siegel, D.I.** and Olcott, P.E., 1979 (Abst.), Potential effects of copper-nickel mining on the hydrology of northeastern Minnesota, In: Proceedings, Geological Society of America North-Central Meeting, Duluth, Minnesota, March 5, 1979, contributed, 15 minutes.
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- 152. Siegel, D.I.** and Franz, K.E., 1984 (Abst.), Isotopic studies of the Sandstone Aquifer, eastern Wisconsin, In: Proceedings, Geological Society of America Meeting, Reno, Nevada, Nov. 8, 1984, p. 655, contributed poster.
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- 154. Siegel, D.I.**, Boldt, D.R. and Chason, D.B., 1985 (Abst.), The hydrogeology and geochemistry of a spring-fen, raised-bog complex, Lost River Peatland, northern Minnesota, American Geophysical Union, Spring Meeting, Baltimore, Maryland, May 29, 1985, EOS, vol. 66, p. 264, contributed, 15 minutes.
- 155. Siegel, D.I.**, 1986 (Abst.), The effects of Pleistocene glaciation on the chemistry of ground water in the proximity of the Forest City and Illinois Basins, north-central United States, Geological Society of America National Meeting; San Antonio, Texas, Abstracts with Programs, vol. 18, p. 749-750, Nov. 10, 1986, Invited, 20 minutes.
- 156. Siegel, D.I.**, Bennett, P. and Berndt, M., 1986 (Abst.), Analysis of inorganic solutes to evaluate groundwater contamination by crude oil, American Geophysical Union, Spring Meeting, Baltimore, Maryland, May 22, 1986, EOS, vol. 67, p. 286, contributed, 15 minutes.
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- 162. Siegel, D.I.**, 1989, Geochemical trends in the Paleozoic setting of western New York: Implication to regional groundwater flow and tectonics, In: Proceedings Canadian Continental Drilling Program, CCDP Report 89-2, p. 17, invited, 30 minutes.
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- 164. Siegel, D.I.** Martini, A.W., Romanowicz, Jr., and Noll, R., 1989, Dedolomitization of the Lockport Dolomite, EOS, contributed, Fall AGU Meeting, San Francisco, in press.
- 165. Siegel, D.I.**, 1989, Ground-water flow in mires: a "hydrobiologic system," International Geologic Congress, Washington D.C., 1989, invited, 20 minutes.
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- 167. Siegel, Donald I.** 1989, Geochemical trends in the Paleozoic section of western New York; implications to regional groundwater flow and tectonics. Yole, R. W.; Drury, M. J. ; editor; editor; Scientific drilling; southern Ontario
- 168.** Algonquin Arch Transect; proceedings of the 1989 workshop Canadian Continental Drilling Program Report, 89,p 17
- 169. Siegel, D.I.** 1990, Effects of continental glaciation on the geochemistry of regional aquifer systems, NE. Section Meeting of the Geological Society of America, Syracuse, New York, invited, 30 minutes, p.71, vol. 22.
- 170. Siegel, D.I.**, McNamara, J.P., Romanowicz, E.A., Glaser, P.H., Nelson, D., Neuzil, S.G., Struck, C.N., Jr., and Fredrick, B.C., 1990, Ground-water discharge beneath raised bogs, Lake Agassiz Peatlands, Minnesota: Part II. Geochemical evidence, Fall Meeting American Geophysical Union, San Francisco, EOS, vol. 71, p. 1299.
- 171. Siegel, D.I.**, Glaser, P.H., and Romanowicz, E.A., 1991, Methane concentrations and groundwater flow in peat, glacial Lake Agassiz Peatlands, Northern Minnesota: Proceedings 10th Int. Symposium Env. Biogeochemistry, San Francisco, p 150.
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- 173. Siegel, D.I.**, 1992, Groundwater flow in wetlands, "Paradigm Lost," Program and Abstracts, The New York Natural History Conference II, April 29 - May 1, 1992, Invited, p. 65.
- 174. Siegel, D.I.**, Hydrogeochemistry of the Niagara Falls Area, 1992 (Host) In Proceedings of the International Association of Hydrogeologists Meetings, Hamilton, Canada, May 1992.

- 175. Siegel, D.I.**, Albright, L., Ferdinand, J., Hart, A., Leiberman, B., Lovinger, A.J., Staley, A.C., and Weisberg, E., 1993, "A Piece of the Earth: a novel approach for teaching elementary Earth Science, NE Meeting of the Geological Society of America, Burlington, Vermont, Proceedings, vol., 25, p. 79.
- 176. Siegel, D.I.**, Andersen, C.B. and Posten, S., 1994, The Hydrogeochemistry of the world's largest landfill: Fresh Kills, Staten Island, New York, Proceedings: NE Geological Society of America Meeting, vol 26, p.73.
- 177. Siegel, D.I.**, 1998, (Abst.) Model Complexity in the Courtroom: A Comment From the Trenches, EOS, vol. 79, S113.
- 178. Siegel, D.I.**, P.H. Glaser, Chanton J., Stalder L. and Rosenberry D., (Abst.), 1998, Enrichment in Deuterium in Water: Evidence for Methanogenesis by Carbonate Reduction in the Glacial Lake Agassiz Peatlands, Northern Minnesota, EOS, vol. 79, S144
- 179. Siegel, D.I.**, 1999, Altered states: contaminant hydrogeology from the perspectives of regulatory and academic scientific communities, Geological Society of America, Abstracts with Programs, Northeastern Section Meeting, Providence, R.I., vol. 31, A-68.
- 180. Siegel, D.I.**, So, J., Glaser, P.H. and Janecke, 1999, The acid-base geochemistry of large peatlands: the dynamic balance between circumboreal groundwater and pore waters rich in organic matter, EOS, vol. 80, p. F375.
- 181. Siegel, D.I.**, Glaser, P.H., and Reeve, A.S. 2000, The Hydrogeochemical and Ecological Linkages In Mires: A Modern Retrospective, Proceedings Wetland Society Annual Meeting, Quebec City, p.xxx
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- 184. Siegel, D.I.**, Chanton, J.P, Glaser, P.H., Rosenberry, D.O., 2000, Deuterium enrichment of peat pore water: Isotopic evidence for Deep Methanogenesis, EOS, vol. 81, p. F217.
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- 187. Siegel, D.I.**, Otz, M.H., Otz, I., McKenzie, J.M., Hassett, J., Bartoz, J., Todorova, S., Flusche, M.A., Lesniak, K.A., Tasillo, J., and Cuomo, D., 2001, Why are the wetland and surface waters sometimes colored in the Croton Watershed (New York)? [abs.]: Eos (Transactions American Geophysical Union), v.82, p. S-182.
- 188. Siegel, D.I.** and P.H. Glaser, 2002, Hydrogeologic Drivers of Mire Ecology and Geochemistry, Abstracts and Programs, Geological Society of America Annual Meeting, Denver, Colorado, p. 56
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- 191. Siegel, D.I.**, Lesniak, K., and Frape, S., 2005, Model Simulation and of the Saratoga Springs: Results and Uncertainties, abst. NE GSA Meeting in Saratoga
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- 195. Siegel, D.I.** 2011, (Abst) Tom Winter's Influence on the Modern Understanding of Wetland Hydrodynamics, 2011 GSA Annual Meeting in Minneapolis (9–12 October 2011) Paper No. 157-7
- 196.** Stone, M.P., **Siegel, D.I.**, Romanowicz, E.A. and Glaser, P.H., 1992, Relationship between sedimentology and occurrence of vegetation communities of northern Minnesota boreal peatlands, , Proceedings Annual Meeting of Geological Society of America, vol 24, p. A337.
- 197.** Szustakowski, R.J. and **Siegel, D.I.**, 1987 (Abst.), Chemical evolution of formation brines in western New York, American Geophysical Union, Spring Meeting, Baltimore, Maryland, May 20, 1987, EOS, vol. 68, p. 320, contributed poster.
- 198.** Todorova, S., **Siegel D I.**, and Costello, A, 2002, Microbial Dynamics in Shallow Peat in Calcareous Fen, EOS, vol. xx, p.xxx
- 199.** Verrillo, D., **Siegel, D.I.** and Martini, A., 1994, Origin and chemical evolution of saline water in the northern Appalachian Basin, Proceedings: NE Geological Society of America Meeting, vol 26, p.73.
- 200.** Whaley, S., Andersen, C.B., **Siegel, D.I.** and Posten, S., 1995, Trace metal distribution in a three component groundwater mixture, Fresh Kills landfill, Staten Island, New York, NE GSA, vol. 26, p.74.
- 201.** Winkley, S. and **Siegel, D.I.**, 1988, The hydrogeology of glacial through valleys, Onondaga County, New York, In: Proceedings of the Northeastern Section Meeting Geological Society America, Portland, Maine. p. 79, contributed poster.
- 202.** Yoder, C.M., **Siegel D.I.**, Newton, C.R., Fastovsky, D.E. and Sheehan, P.M., 1995, Sulfur isotope anomalies near terrestrial K/T boundaries, Abstracts with Programs NE Geological Society of America Meeting, vol. 27, p.349.