

Leonard Harvey Thorleifson Ph.D.: April 2008

- Director, Minnesota Geological Survey; State Geologist of Minnesota; Professor, Department of Geology and Geophysics; University of Minnesota, 2642 University Ave W, St Paul, MN 55114-1057; 612-627-4780-224; thorleif@umn.edu
- <http://www.geo.umn.edu/people/profs/THORLEIFSON.html>
- Date and place of birth: 6 April 1957; Baldur, Manitoba, Canada
- Citizenship & immigration status: Canadian citizen, US Permanent Resident

Education

- Doctor of Philosophy, Geology, University of Colorado, 1989
- Master of Science, Geology, University of Manitoba, 1983
- Bachelor of Arts, Honours, Geography, University of Winnipeg, 1980

Professional registration

- Professional Geoscientist, Association of Professional Geoscientists of Ontario

Employment

- Director, Minnesota Geological Survey, 2003-present
- Professor, Department of Geology & Geophysics, University of Minnesota, 2003-present
- Senior Member, Graduate Faculty, Water Resources Science, University of Minnesota
- Research Scientist, Geological Survey of Canada, 1986 – 2003:
 - Geological mapping; 3D GIS; large databases
 - Regional groundwater investigations
 - Long term history and controls on Red River flooding
 - Offshore surveys, shoreline erosion, soil chemistry, climate change
 - Quaternary stratigraphy, sedimentology, & paleoenvironmental analysis
 - Indicator mineral methods in mineral exploration; diamonds, gold

Professional Honours

- Honourary Doctor of Science, University of Winnipeg, 2007
- Co-recipient, The Carol Shields Winnipeg Book Award, 2003, Crossroads of the Continent: A History of The Forks of the Red and Assiniboine Rivers, Heartland Associates Inc., Edited by Barbara Huck
- Distinguished Lecturer, Canadian Institute of Mining, Metallurgy and Petroleum, 1998-1999
- Natural Resources Canada Merit Awards; 1996, 1997, 1998, 1999

Professional Service

- Organizing Committee, AASG Centennial Conference co-hosted with USGS, 2008
- Trustee, Geological Society of America Foundation Inc., 2007-present
- Statistician, Association of American State Geologists (AASG), 2006-present
- Association of American State Geologists Geologic Mapping Committee Chair, 2006-present
- Organizing Committee, OneGeology.org, 2006-present
- President, Canadian Geoscience Council, 2004-2006
- Program Chair, Geological Society of America North Central Annual Meeting, 2005
- President, Geological Association of Canada, 2003-2004
- Associate Editor, *Journal of Great Lakes Research*; 2003-present
- Executive, Geological Association of Canada, 2002-2005
- Chair, Canadian Institute of Mining & Metallurgy, Ottawa Branch, 2002-2003
- Councillor, Geological Association of Canada, 1999-2002

Expert panels

- USGS-AASG Statemap Review Panel – 2006, 2007
- Provost's Advisory Committee on creation of a University of Minnesota Institute on the Environment, 2006
- Member, Head of Earth Science Search Committee, November 2005 – March 2006
- Ex officio member, Minister's National Advisory Board on Earth Sciences, Natural Resources Canada, 2004-2006
- Ex officio member, Geological Survey of Canada Advisory Committee, Natural Resources Canada, 2004-2006
- Member, USGS Soil Geochemistry expert panel; Denver, 10-12 April 2006
- Member, Review Panel, USGS Mineral Resources Grants Program, June 2005
- Member of USGS Eastern Mineral Resources Team 2004 Strategic Review 5-person panel; one-day review, Reston; lead writer of review & recommendations
- USGS Soil Geochemistry working group; University of California, Davis, 3-4 March 2004
- Expert Technical Advisory Committee, Ontario Mineral Exploration Technologies Program; 2001-2004 – one of two Quaternary geologists among ten experts who reviewed over 50 proposals since mid-2001 for an \$8M research fund
- National Round Table on the Environment and the Economy, Environment and Sustainable Development Indicators Initiative, Land and Soils Cluster Group; 2001 – development of indicators for land use and soil quality
- White House Diamond Conference: Technologies for Identification and Certification; Washington, DC; January 10, 2001 – development of procedures to suppress the trade in conflict diamonds
- Departmental environmental review panel; Atomic Energy of Canada nuclear fuel waste disposal concept; 1993-1995

Workshop and Short Course Leader

- Application of Heavy Mineral Methods in Stream Sediment and Till to Exploration; Alaska Miner's Association 2007 Annual Convention and Trade Show; Short Course, November 5 – 6, 2007, Anchorage
- Workshop co-chair; 3D Geological Mapping for Groundwater Applications; Denver, Colorado, October 27, 2007
- Short course co-leader & lead-off presenter; Indicator mineral methods in mineral exploration; September, 2007; Exploration 2007, Toronto
- Organizing committee, OneGeology Workshop, Brighton, U.K., March 2007
- Workshop co-chair; 3D Geological Mapping for Groundwater Applications; Salt Lake City, Utah, October 15, 2005
- Organizer; Minnesota Minerals Coordinating Committee, Minerals Opportunities Meeting on Minnesota Diamond Potential, February 16, 2005
- Workshop co-chair; 3D Geological Mapping for Groundwater Applications; St. Catharine's, Ontario, May 15, 2004
- Short course co-leader & lead-off presenter; Indicator mineral methods in mineral exploration; March 8, 2003; Prospectors and Developers Association of Canada, Toronto
- Chair; National Surficial Geological Mapping Workshop, Ottawa, 12/13 December 2002
- Workshop co-chair & speaker; 3D Geological Mapping for Groundwater Applications; Denver, Colorado, October 26, 2002
- Workshop co-chair; Federal Water Research Network workshop on coordination of federal water resource research; March 7, 2002, Ottawa
- Short course co-leader; Kimberlite indicator mineral tracing in Canada; principles and methods; Queen's University; May 1999; 2000, 2001, 2002, 2003
- Short course presenter: Kimberlite indicator minerals in glacial sediments. Association of Exploration Geochemists, International Geochemical Symposium, Vancouver, April 10 1999
- Short course presenter: Kimberlite indicator minerals in glacial sediments. Diamond exploration short course, Edmonton, 1992
- Short course presenter: Kimberlite indicator minerals in glacial sediments. Diamond exploration short course, Sudbury, 1992

Coordination

- Organizer & co-chair, Geoscience Summit 2004, Ottawa, October 2004
- Facilitator; Federal/Provincial Consultation on Surficial Geological Mapping, Ottawa, 2002
- Coordinator; science/policy liaison, Natural Resources Canada water-related research – 2001 - 2003, responsible for linking Departmental science and policy initiatives related to water quality, aquatic ecosystems, water resources, and water-related hazards
- Co-coordinator; measurement and modelling of glacial isostatic adjustment initiative - since 1999, facilitator of a working group dealing with the use of absolute gravity and uplift measurements in applications such as geodetic reference systems and lake level change, including a conference session, workshop, and successful proposal development

- Coordinator: Prairie groundwater/climate change project- 1999-2003; coordination of a multi-agency working group of federal staff, provincial staff in three provinces, and university-based researchers, including a workshop and successful proposal development
- Coordinator: Hydrogeology of the Winnipeg/Lake Winnipeg region project – 1996-2003; coordination of a regional multi-agency groundwater project in south-eastern Manitoba
- Co-coordinator; Lake Winnipeg Project –1993-2003; co-coordinator of a multi-agency project on the Lake Winnipeg basin, including arrangement for financial support from Manitoba Hydro in relation to controversy over shoreline erosion
- Co-coordinator; Prairie soil and till sampling program – co-coordinator of a 1992 multi-agency collection of till and soil for indicator mineral and soil chemistry analysis from over 2000 sites across the prairie region
- Co-coordinator; Geology of the Winnipeg region National Geoscience Mapping Program (NATMAP) project; 1991-2003, co-coordinator of a series of projects on the geology of south-eastern Manitoba

Investment Seminar Speaker

- Government of Canada/Financial Industry seminars promote investment in Canadian mining
- Tokyo, Seoul, 2001; Perth, Melbourne, Sydney, 1997; Hong Kong, 1997

Postdoctoral Fellow Supervision

- 2004-2005; Zbigniew S. Malolepszy; 3D mapping

Teaching

- University of Minnesota, Autumn 2007, Autumn 2006, Autumn 2005, Autumn 2004, Winter 2004, Freshman Seminar, presented with Survey staff; University of Colorado, 1983-1986, TA/Laboratory Instructor – Introductory Geology, Sedimentology; University of Winnipeg, 1982, Sessional lecturer - Introductory Geology; University of Manitoba, 1981-1983, TA/Laboratory Instructor – Paleontology, Geomorphology; Swimming instructor, 1974-1976

Advocacy

- Association of American State Geologists liaison committee, Washington DC; March and September 2003-present
- Geological Association of Canada representative to the Partnership Group for Science and Engineering (PAGSE) – which speaks on behalf of Canadian science and engineering to the Government of Canada; 1999-2003
- Member, PAGSE Communications Committee – which organizes monthly Parliament Hill ‘Bacon and Eggheads’ breakfasts at which scientists speak to Members of Parliament and science policy leaders; 1999-2003

Fieldwork

- 2004: till sampling, soil sampling, north-central Minnesota
- 1997: till sampling by float plane; north-eastern Manitoba
- 1994 & 1996: offshore surveys; Lake Winnipeg
- 1992: drilling; kimberlite property, Saskatchewan
- 1991-1992: till sampling, soil sampling, mapping, stratigraphy, drilling; Prairie region
- 1986-1988: till sampling, mapping, drilling; Beardmore-Geraldton, northern Ontario
- 1987: winter drilling; Timmins, northern Ontario
- 1986 & 1987: offshore surveys; Hudson Bay
- 1984-1986; Ph.D. field work, stratigraphy; Hudson Bay Lowland, northern Ontario
- 1983-1986; leader of undergraduate field trips; Colorado
- 1981: M.Sc. field work, Lake Agassiz outlets; Lake Nipigon region, northern Ontario
- 1980: summer student, mapping, Manitoba Geological Survey; southeastern Manitoba
- 1979: summer student, ecological research; Experimental Lakes Area, near Kenora Ontario

Thesis Supervision

- External examiner, Ph.D., Aki Artimo, University of Turku, Finland, 2003; Committee member, Ph.D., Nancy Grant, University of Manitoba, Canada, 1997; Committee member, Ph.D., Abigail Burt, University of Waterloo, Canada, 1997; External examiner, M.Sc., Tim Warman, University of Manitoba, Canada, 1991; External examiner, M.Sc., Rick Lemoine, University of Manitoba, Canada, 1988

Software Design

- Design team; Vertical Mapper, Borehole Mapper

Adjunct Professor

- University of Waterloo Adjunct Professor; 1998-2002
- University of Manitoba Adjunct Professor; 1998-2002

Selected Memberships

- Association of American State Geologists
- American Geophysical Union
- American Quaternary Association
- Association of Applied Geochemists
- Canadian Water Resources Association
- Geological Association of Canada
- Geological Society of America
- Minnesota Ground Water Association
- Prospectors and Developers Association of Canada

Theses

- Quaternary stratigraphy of the central Hudson Bay Lowland; 1989; University of Colorado at Boulder; Supervisor: Dr. J. T. Andrews
- The eastern outlets of Lake Agassiz; 1983; University of Manitoba; Supervisor: Dr. J. T. Teller

Student Honours

- Geological Society of America Quaternary Geology and Geomorphology J. Hoover Mackin Award, 1985 – in recognition of Ph.D. research
- Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship; 1982 – 1985 – in support of M.Sc. & Ph.D. research
- University of Manitoba Graduate Fellowship, 1981; Dr. George Brownell Prize in Earth Sciences, 1981 – in recognition of highest academic achievement in geology course work
- University of Winnipeg Gold Medal in Honours Geography, 1980
- The O. T. Anderson Award, to the outstanding graduate for distinguished academic and extra-curricular achievement during undergraduate years, 1980; The Wesley Award, for distinguished service to the University of Winnipeg Student Government, 1980; W.C. Lockhart Award, for devoted service to the students of the University of Winnipeg, 1979 – to recognize achievement, including terms as President and Vice-President of the University of Winnipeg Students Association, four years as student Senator on the university academic governing body, two years as student Board member on the university financial governing body, and service on several university administrative committees and search committees
- University of Winnipeg Alumni Association Entrance Scholarship, 1975

Recent Unrefereed Publications

Thorleifson, L. H. 2006. President's Report, 2006; Canadian Geoscience Council. 21p.

Thorleifson, L. H. 2004. Mapping; Geotimes annual highlights issue, v. 49, no. 7, p. 32-33.

Thorleifson, L. H. and S. Hanmer. 2005. Conference Report, Geoscience Summit 2004 Ottawa, Ontario 16 - 17 October 2004, v. 32. no. 2, p. 49-63.

Thorleifson, L. H. 2004. Presidential Address: Geoscience for the needs of Canadians, Geoscience Canada, v. 31. no. 3, p. 97-101.

Thorleifson, L. H. 2003. Crossroads of the Continent; a history of the Forks of the Red and Assiniboine Rivers; Chapter 1, The Foundation of the Forks; Chapter 2, Laying down the landscape; Heartland Associates, Winnipeg, p. 14-45.

Thorleifson, L. H. and McClenaghan, M. B. 2003. Indicator Mineral Methods in Mineral Exploration. Prospectors and Developers Association of Canada Short Course, March 8, 2003, 100 p.

Selected Publications and Reports

Thorleifson, L. H., ed., 2008, Potential capacity for geologic carbon sequestration in the Midcontinent Rift System in Minnesota, Minnesota Geological Survey Open File Report OFR-08-01, 138 p.

Thorleifson, L. H., 2008, Understanding Canada's Water, Canadian Water Treatment, January/February 2008, v. 8, no. 1, p. 32-33

Jennings, C.E., J. S. Aber, G. Balco, R. Barendregt, P. R. Bierman, C. W. Rovey III, L. H. Thorleifson, and J. A. Mason. 2007. Mid-Quaternary in North America. In S.A. Elias. Ed., Encyclopedia of Quaternary Science, p. 1044-1051.

Thorleifson, L. H., K. L. Harris, H. C. Hobbs, C. E. Jennings, A. R. Knaeble, R. S. Lively, B. A. Lusardi, G. N. Meyer. 2007, Till geochemical and indicator mineral reconnaissance of Minnesota. Minnesota Geological Survey Open File Report OFR-07-01, 512 p., 15 pdf digital files, 5 digital images.

Mayer, T., Simpson, S., Thorleifson, L.H, Lockhart, W., Wilkinson, P. 2006. Phosphorus geochemistry of recent sediments in the South Basin of Lake Winnipeg. Aquatic Ecosystem Health & Management, Volume 9, Number 3, July-September 2006, pp. 307-318

Brooks, G, C. F. M. Lewis, and L. H. Thorleifson. 2005. Influence of loss of gradient from postglacial uplift on Red River flood hazard; The Holocene, v. 15, no. 3, pp. 347-352.

Thorleifson, L. H., K. Harris, J. Berg, R. Tipping, Z. Malolepszy, B. Lusardi, D. Setterholm, and F. Anderson; 2005; Geological mapping and 3D model of deposits that host ground-water systems in the Fargo-Moorhead region, Minnesota and North Dakota; Minnesota Geological Survey Report, submitted to the U.S. Department of the Interior, Bureau of Reclamation in fulfilment of Cooperative Agreement No 04FG601925, in support of the Red River Valley Water Supply Project; 155 p., accompanied by 1:200,000 surficial geology map, 1:400,000 bedrock geology map, drillhole database, and digital files depicting extent, thickness, and elevation of mapped strata

Thorleifson, L. H. 2004. Diamond exploration in Canada; 37th Forum on the Geology of Industrial Minerals, p. 163-166.

Thorleifson, L. H. and Pyne, D. M. 2004. Conversion of lithological data in the Manitoba water well database (GWDrill) to a mappable format; *in* Soller, D.R., editor, 2003, Digital Mapping Techniques '03 -- Workshop Proceedings: U.S. Geological Survey Open-file Report 03-471.

Thorleifson, L. H., G. L. D. Matile, G. R. Keller, and D. M. Pyne. 2003. Construction of a hydrostratigraphic model for southern Manitoba; 4th Joint International Association of Hydrogeologists-Canadian National Chapter/Canadian Geotechnical Society Conference, 5 p.

Simpson, S. L., L. H. Thorleifson, C.F.M. Lewis, and J.W. King. 2003. 1999 Lake Winnipeg Project: cruise report and scientific results; Geological Survey of Canada Open File 4196, 423 p.

Brooks, G.R., St. George, S., Lewis, C.F.M., Medioli, B.E., Nielsen, E., Simpson, S., and Thorleifson, L.H. 2003. Geoscientific insights into Red River flood hazards in Manitoba. Geological Survey of Canada Open File Report 4473, 35 pp.

Thorleifson, L. H. and Berg, R. C. 2002; Three-Dimensional Geological Mapping for Groundwater Applications; Workshop Extended Abstracts; Denver, Colorado, October 26, 2002; Geological Survey of Canada Open File 1449, 87 p.

Lewis, C. F. M., Forbes, D. L., Todd, B. J., Nielsen, E., Thorleifson, L. H., Henderson, P. J., McMartin, I., Anderson, T. W., Betcher, R. N., Buhay, W. M., Burbidge, S. M., Schröder-Adams, C. J., King, J. W., Moran, K., Gibson, C., Jarrett, C.A., Kling, H. J., Lockhart, W. L., Last, W. M., Matile, G. L. D., Risberg, J., Rodrigues, C. G. Telka, A.M., and Vance, R. 2001. Uplift-driven expansion delayed by middle Holocene desiccation in Lake Winnipeg, Manitoba, Canada. *Geology*, v. 29, no. 8, p. 743-746.

Berg, R. C. and L. H. Thorleifson. 2001; Geological Models for Groundwater Flow Modeling; GSA North-Central Section, Workshop Extended Abstracts. Illinois State Geological Survey Open File Series 2001-1, 62 pp.

Maathuis, H. and Thorleifson, L. H. 2000. Potential impact of climate change on Prairie groundwater supplies: review of current knowledge. Saskatchewan Research Council Publication No. 11304-2E00, 43 p., 28 figures, three appendices.

Thorleifson, L. H. and R. G. Garrett. 2000. Lithology, mineralogy, and geochemistry of glacial sediments overlying kimberlite at Smeaton, Saskatchewan. Geological Survey of Canada Bulletin 551, 40 p.

Todd, B. J., C. F. M. Lewis, E. Nielsen, L. H. Thorleifson, R. K. Bezys, and W. Weber. 1998. Lake Winnipeg: geological setting and sediment seismostratigraphy; *Journal of Paleolimnology*, v. 19, p. 215-244.

Lambert, A., T. S. James, and L. H. Thorleifson. 1998. Combining geomorphological and geodetic data to determine postglacial tilting in Manitoba; *J. Paleolimnology*, v. 19, p. 365-376.

Matile, G. L. D., Thorleifson, L. H., Grant, N., Burt, A. and Mann, J. (1998): Geology of the Winnipeg region NATMAP project (NTS 62H/W, 62I and 52L/W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1998, p. 161-171.

Thorleifson, L. H., Betcher, R., Birks, J., Boyle, D., Cherry, A., Clark, I., Desbarats, A., Edwards, T., Farrell, D., Grasby, S., Hinton, M., Kaszycki, C., Kennedy, P., Leybourne, M., McDougall, W., McRitchie, D., Osadetz, K., Remenda, V., Render, F., Ryan, S. and Woodbury, A. (1998): Hydrogeology and Hydrogeochemistry of the Red River valley/Interlake

region of Manitoba (NTS 62H, 62I, 62O, 62P and 63B); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1998, p. 172-185.

Thorleifson, H., Brooks, G., Hanuta, I., Kroker, S., Matile, G., Nielsen, E., Prévost, C., and Rannie, W., 1998: Red River flooding: evolutionary geomorphic trends and evidence for major floods in recent centuries (NTS 62H/W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1998, p. 186-195.

Thorleifson, H., Anderson, T., Betcher, R., Bezys, R., Buhay, W., Burbidge, S., Cobb, D., Courtier, N., Doering, J., Fisher-Smith, G. Forbes, D., Franzin, W., Friesen, K., Frobel, D., Fuchs, D., Gibson, C., Henderson, P., Jarrett, K., James, T., King, J., Kling, H., Lambert, A., Last, W., Lewis, M., Lockhart, L., Matile, G., McKinnon, T., Moran, K., Nielsen, E., Pullan, S., Rack, F., Risberg, J., Rodrigues, C., Salki, A., Schröder-Adams, C., Stainton, M., Telka, A., Todd, B., Vance, R. and Weber, W. (1998): Status of the Lake Winnipeg Project (NTS 62I, 62P, 63A, 63B, 63G and 63H); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1998, p. 196-209.

McClenaghan, M. B., Thorleifson, L. H., and DiLabio, R. N. W. 1997. Till Geochemical and Indicator Mineral Methods in Mineral Exploration; in Proceedings of Exploration 97: Fourth Decennial International Conference on Mineral Exploration, ed. A. G. Gubins, p. 233–248.

Thorleifson, L. H. and R. G. Garrett. 1997. Kimberlite indicator mineral and geochemical reconnaissance, southern Alberta; in Exploring for minerals in Alberta: Geological Survey of Canada Geoscience Contributions, Canada-Alberta Agreement on Mineral Development (1992-1995); ed. R. W. Macqueen; Geological Survey of Canada Bulletin 500, p. 209-233.

Thorleifson, L. H. 1996. Review of Lake Agassiz History. in Sedimentology, Geomorphology, and History of the central Lake Agassiz Basin, Field Trip B2, Teller, J. T., Thorleifson, L. H., Matile, G., and Brisbin, W. C., eds., Geological Association of Canada Guidebook, p. 55-84.

Garrett, R. G. and Thorleifson, L. H. 1995. Kimberlite indicator mineral and till geochemical reconnaissance, southern Saskatchewan. in D. G. Richardson, ed., Investigations completed by the Saskatchewan Geological Survey and the Geological Survey of Canada under the geoscience program of the Canada-Saskatchewan Partnership Agreement on Mineral Development (1990-1995), Geological Survey of Canada Open File 3119; Saskatchewan Geological Survey Open File Report 95-3, p. 227-253.

Thorleifson, L. H., P. H. Wyatt and T. A. Warman. 1993. Quaternary stratigraphy of the Severn & Winisk drainage basins, Ontario. Geological Survey of Canada Bulletin 442, 59 p.

Thorleifson, L. H. and F. J. Kristjansson. 1993. Quaternary geology and drift prospecting, Beardmore- Geraldton area, Ontario. Geological Survey of Canada Memoir 435, 146 p.

Thorleifson, L. H., P. H. Wyatt, W. W. Shilts, and E. Nielsen. 1992. Hudson Bay Lowland Quaternary stratigraphy: evidence for early Wisconsinan glaciation centred in Quebec. in P. U.

Clark and P. D. Lea, eds., The Last Interglacial-Interglacial Transition in North America. Geological Society of America Special Paper 270, p. 207-221.

Rannie, W. F., L. H. Thorleifson and J. T. Teller. 1989. Holocene evolution of the Assiniboine River paleochannels and Portage la Prairie alluvial fan. Canadian Journal of Earth Science, v. 26, pp. 1834-1841.

Forman, S. L., A. G. Wintle, L. H. Thorleifson and P. H. Wyatt. 1987. Thermoluminescence properties and age estimates for Quaternary raised marine sediments, Hudson Bay lowland, Canada. Canadian Journal of Earth Science, v. 24, pp. 2405-2411.

Teller, J. T. and L. H. Thorleifson. 1987. Catastrophic flooding into the Great Lakes from Lake Agassiz. in Catastrophic Flooding (Binghamton Symposium in Geomorphology; V. 18), edited by L. Mayer and D. Nash, Allen and Unwin, p. 121-138.

Dredge, L. A. and L. H. Thorleifson. 1987. The Middle Wisconsinan history of the Laurentide Ice Sheet. Géographie physique et Quaternaire, v. XLI, no. 2, p. 215-235.

Teller, J. T., L. H. Thorleifson, L. A. Dredge, H. C. Hobbs and B. T. Schreiner. 1983. Maximum extent and major features of Lake Agassiz. in Glacial Lake Agassiz, edited by J. T. Teller and Lee Clayton, Geological Association of Canada, Special Paper 26, p. 43-45.

Teller, J. T. and L. H. Thorleifson. 1983. The Lake Agassiz - Lake Superior Connection. in Glacial Lake Agassiz, edited by J. T. Teller and Lee Clayton, Geological Association of Canada, Special Paper 26, p. 261-290.

Recent & Forthcoming Invited Technical Presentations & Public Lectures

- ✚ Prospects for Geologic CO₂ Sequestration in the Upper Midwest, Iowa Geological Survey, April 4, 2008
- ✚ Till geochemical and indicator mineral reconnaissance of Minnesota, University of Iowa, April 4, 2008
- ✚ Till geochemical and indicator mineral reconnaissance of Minnesota, Minnesota Earth Science Teachers Association, February 1, 2008
- ✚ The search for diamonds in Minnesota, Geological Society of Minnesota, Lecture, January 28, 2008
- ✚ Vision for web-accessible 3D geological mapping, Gocad seminar, Vancouver, 25 January 2008
- ✚ Prospects for Geologic CO₂ Sequestration in the Upper Midwest, Minnesota DNR Staff Meeting, November 29, 2007
- ✚ Vision for web-accessible 3D geological mapping, Minnesota Geotechnical Society, Duluth Chapter, November 20, 2007
- ✚ Minnesota Geochemical Database; Minnesota Water Resources Conference, October 23, 2007
- ✚ Geological Society of America, Hot Topics, Geology – Google Earth-style, lead-off speaker, October 28, 2007

- # Keynote Address; GIS Day; Ottawa, October 2007
- # Canadian Diamonds, Minnesota Mineral Club, October 20, 2007
- # Presentation on characterization activities that have been planned by the Minnesota Geological Survey; Geological Characterization; PCOR Partnership, Grand Forks, October 19, 2007;
- # Canada's Water; Public Lecture, University of Winnipeg, September 13, 2007
- # Till geochemical and indicator mineral reconnaissance of Minnesota, AIPG Minnesota Chapter Luncheon, September 2, 2007
- # Public sector case study: Indicator mineral survey of Minnesota; Short Course; Exploration 2007, Toronto, September 2007
- # Introduction to indicator mineral methods in mineral exploration; Short Course; Exploration 2007, Toronto, September 2007
- # Indicator mineral methods in mineral exploration – wrap-up talk; Short Course; Geological Association of Canada, Yellowknife, May 22 2007
- # Vision for web-accessible subsurface information, Committee on Geological and Geotechnical Engineering, National Research Council, Washington DC, May 17, 2007
- # Vision for web-accessible subsurface information, Keynote Address, Pennsylvania GIS Conference, Camp Hill, PA, May 16 2007
- # Thorleifson, L. H., K. L. Harris, H. C. Hobbs, C. E. Jennings, A. R. Knaeble, R. S. Lively, B. A. Lusardi, G. N. Meyer. 2007, Till geochemical and indicator mineral reconnaissance of Minnesota. Institute on Lake Superior Geology, poster
- # Till geochemical and indicator mineral reconnaissance of Minnesota, Mesabi Geological Society, Lecture, April 18, 2007
- # Introduction to the Geological Specification, Lecture, OneGeology Workshop, Brighton UK, March 2007
- # Future Aspirations, Lecture, OneGeology Workshop, Brighton UK, March 2007
- # Vision for web-accessible subsurface information, Agriculture and Agri-food Canada, Ottawa, January 9, 2007
- # Geoscience for the Needs of Society; Keynote Address; Western Inter-University Geoscience Conference, Winnipeg, January, 2007
- # The Future of Geological Mapping; Geological Survey of Canada Logan Club, Ottawa, November 24, 2006
- # The Future of Geological Mapping; USGS Reston, November 21, 2006
- # The role of the Minnesota Geological Survey in groundwater management, Minnesota Ground Water Association, November 14, 2006
- # Vision for web-accessible 3D Geological Mapping, Geological Society of America, Philadelphia, October 22, 2006
- # Geoscience for the Needs of Society; Keynote Address; American Institute of Professional Geologists National Meeting, St. Paul, September 26, 2006
- # Vision for web-accessible 3D Geological Mapping, Digital Mapping Techniques, Columbus Ohio, June 2006
- # Canadians need web accessible 3D geological mapping ASAP; May 2006, Geological Association of Canada, Montreal, session keynote address
- # 3D geological mapping, Iowa State University, 21 April 2006
- # The Search for Diamonds in North America, Geological Society of Minnesota, 17 April 2006

- ✚ The role of geological mapping in supporting production agriculture; West Central Spring Agronomy Seminar, Owatonna, 22 February 2006
- ✚ 3D Geological Mapping in support of groundwater inventory in the Fargo-Moorhead region, North Dakota and Minnesota; 16 February 2006; Detroit Lakes Public Library
- ✚ 3D Geological Mapping in support of groundwater inventory in the Fargo-Moorhead region, North Dakota and Minnesota; 16 February 2006; City of Moorhead Public Service Commission
- ✚ 3D Geological Mapping in support of groundwater inventory in the Fargo-Moorhead region, North Dakota and Minnesota; 15 February 2006; North Dakota State University
- ✚ 3D Geological Mapping in support of groundwater inventory in the Fargo-Moorhead region, North Dakota and Minnesota; 15 February 2006; University of North Dakota
- ✚ Geology of the Red River Basin and Lake Winnipeg; January 2006. Red River Basin Commission. Winnipeg. Lead-off technical speaker
- ✚ The Search for Diamonds in North America, St. Cloud State University, St. Cloud, Minnesota, October 28, 2005
- ✚ The Search for Diamonds in North America, University of Wisconsin, Oshkosh, Wisconsin, October 13, 2005
- ✚ Information Systems Required to Ensure Sustainable Groundwater Supply, invited lecture, Prairie Water Policy Symposium, Winnipeg, 22 September 2005
- ✚ Diamonds, guest speaker, 29 June 2005, University of St. Thomas
- ✚ Indicator mineral methods in mineral exploration, guest speaker, Wisconsin Geological Survey, Madison, 1 June 2005
- ✚ Harris, K. L., Berg, J. A., Lusardi, B. A., Setterholm, D. R., Tipping, R. G., Malolepszy, Z., Anderson, F. J., Thompson, D. L., Arntson, A. D., Reppe, T. H. C., and Thorleifson, L. H. 2005. Geological mapping and 3D model of the Fargo-Moorhead region, Minnesota and North Dakota, and a review of published information on ground water availability assessment of surficial aquifers of the Red River of the North basin, Minnesota; Geological Society of America North-Central Section, 2005 Abstracts with Programs, v. 37, no. 5, p. 94.
- ✚ Canada's Water; Geological Association of Canada, Halifax, May 2005
- ✚ Development of digital, interactive, and 3D geological mapping systems for groundwater applications; Soil, Water, and Climate Seminar, University of Minnesota, 11 April, 2005
- ✚ Development of digital, interactive, and 3D geological mapping systems, Digital Mapping Techniques, Baton Rouge, April 2005
- ✚ Indicator mineral methods in mineral exploration, and their application to Minnesota geology, Luncheon speaker, American Institute of Professional Geologists Minnesota Chapter, 5 April 2004
- ✚ Geology of Lake Winnipeg, Geological Society of Minnesota, 21 February 2005
- ✚ Indicator mineral methods in mineral exploration, and their application to the discovery of diamonds in Canada, guest speaker, University of Wisconsin, Eau Claire, 18 February 2005
- ✚ Overview of the world diamond market, Minnesota Minerals Coordinating Committee, Minerals Opportunities Meeting on Minnesota Diamond Potential, February 16, 2005

- ✚ Indicator mineral methods in diamond exploration, Minnesota Minerals Coordinating Committee, Minerals Opportunities Meeting on Minnesota Diamond Potential, February 16, 2005
- ✚ Groundwater Mapping, Red River Basin Commission International Summit Conference, Fargo, 13 January 2005
- ✚ Development of digital, interactive, and 3D geological mapping systems, Minnesota soil mapping liaison meeting, 11 January 2005
- ✚ Development of digital, interactive, and 3D geological mapping systems, Ontario Mineral Exploration Technologies Program, 3D mapping symposium, Toronto 16 December 2004
- ✚ Development of digital, interactive, and 3D geological mapping systems, Minnesota Association of Professional Soil Scientists Fall Meeting, 3 December 2004
- ✚ Indicator mineral methods in mineral exploration, Manitoba Geological Survey Open House, Winnipeg, 20 November
- ✚ The Search for Diamonds in Canada, McAlester College, 18 November 2004
- ✚ Indicator mineral methods in mineral exploration, Keynote address, Quebec Exploration 2004, Quebec City, November 2004
- ✚ Development of digital, interactive, and 3D geological mapping systems, Geological Society of America Annual Meeting, Denver, November 2004
- ✚ Development of digital, interactive, and 3D geological mapping systems, International Geological Congress, Florence Italy, August 2004
- ✚ Drinking Water Protection and 3D Mapping, Minnesota Department of Health, Drinking Water Protection Staff Meeting, Nisswa 27 October 2004
- ✚ Overview of geoscience in Canada, Geoscience Summit, Ottawa, 16 October 2004
- ✚ The Search for Diamonds in Canada, University of Minnesota, Department of Geology and Geophysics, Department Seminar, 30 September 2004
- ✚ New frontiers in geological mapping, Guest Speaker, Geological Society of Minnesota Annual Banquet, September 20 2004
- ✚ Sustainable development of Groundwater Resources, Sustainable Water Resources Roundtable, St. Paul, 13 September
- ✚ Geoscience for the needs of society, Wrap-up speaker, International Conference on Developments and Prospects of Professional Geology in the World: a new relationship between geology and society; Florence, Italy, August 27, 2004
- ✚ Geoscience for the Needs of Canadians; Presidential Address; Geological Association of Canada, St. Catharines Ontario, 12 May 2004
- ✚ Developments in geological mapping, North Dakota Geological Survey, Bismarck, 27 April 2004
- ✚ The role of 3D Geological Mapping in Groundwater Management, Guest Speaker, North Dakota State University, Faculty of Engineering, Fargo, 26 April 2004
- ✚ 3D mapping of Red River Valley groundwater resources; Moorhead City Council, Moorhead, 26 April 2004
- ✚ New methods in geological mapping; Dinner speaker, Minnesota Geotechnical Society, 14 April 2004

- ✚ New frontiers in geological mapping; Society for Mining, Metallurgy, and Exploration, Minnesota Section, Duluth, 13 April 2004
- ✚ The Search for Diamonds in Canada, Luncheon speaker, American Institute of Professional Geologists Minnesota Chapter, 6 April 2004
- ✚ The role of glaciology in diamond exploration, Luncheon speaker, Midwest Glaciology Conference, Minneapolis, 25 March 2004
- ✚ The role of 3D Geological Mapping in Groundwater Management, Plenary Speaker, Minnesota Water 2004, 23 March 2004
- ✚ The role of geological mapping in groundwater management; Dinner speaker; Minnesota Department of Natural Resources Division of Waters Staff meeting; 16 March 2004
- ✚ The role of geological mapping in supporting agriculture; West Central Spring Agronomy Update, Owatonna, 24 February 2004
- ✚ The role of geological mapping in groundwater management; Minnesota Pollution Control Agency, Rochester, 18 February 2004
- ✚ The role of geological mapping in groundwater management; Board of Water and Soil Resources, St. Paul, 27 January 2004
- ✚ Developments in geological mapping, Guest Speaker, Iowa Geological Survey, Iowa City, 29 January 2004
- ✚ The role of geological mapping in groundwater management; Minnesota Pollution Control Agency, St. Paul, 22 January 2004
- ✚ New methods in geological mapping; Minnesota Department of Natural Resources Division of Land and Minerals Staff meeting; St. Cloud, 20 January 2004
- ✚ 3D mapping of Red River Valley groundwater resources; Red River Basin Commission annual conference, Moorhead, 14 January 2004
- ✚ Geological map of the future; digital, interactive, 3D. American Geophysical Union Fall Meeting, San Francisco, December 2003
- ✚ The role of geological mapping in groundwater management; Minnesota Department of Agriculture, St. Paul, 15 December 2003
- ✚ Indicator mineral methods in mineral exploration, University of Minnesota, Duluth, 20 November 2003
- ✚ Geological map of the future; digital, interactive, 3D. NATO Advanced Research Workshop, Poland, November 2003
- ✚ The role of geological mapping in groundwater management; Minnesota Ground Water Association annual conference, 10 November 2003
- ✚ Construction of a groundwater model for the Winnipeg region, United States Geological Survey, Mounds View, 6 November 2003
- ✚ Geological map of the future; digital, interactive, 3D. Earthtech, Minneapolis, 29 October 2003
- ✚ The Search for Diamonds in Canada; Dinner speaker; Mesabi Range Geological Society, Eveleth, 22 October 2003
- ✚ Development of methods for 3D geological mapping, University of Turku, Finland, 8 October 2003

- ✚ Developments in North American geological mapping, Geological Survey of Finland, 7 October 2003
- ✚ 3D geological mapping for groundwater applications, University of Helsinki Geology Department, Finland, 6 October 2003
- ✚ Natural history of Lake Winnipeg, Dinner speaker, Canadian Association of Geographers, Prairie Chapter, Gimli, Manitoba, 27 September 2003
- ✚ Last millennium sedimentation in Lake Winnipeg: a record of recurring Red River floods; University of Minnesota Quaternary paleoenvironments seminar, 24 September 2003
- ✚ The role of geological mapping in addressing water-related issues, Water Resources Science Seminar, St. Paul Campus, University of Minnesota, 22 September 2003
- ✚ Thorleifson, L. H., G. L. D. Matile, G. R. Keller, and D. M. Pyne, 2003, Construction of a hydrostratigraphic model for southern Manitoba; 4th Joint International Association of Hydrogeologists-Canadian National Chapter/Canadian Geotechnical Society Conference, Winnipeg, September 2003
- ✚ The role of geoscience in addressing water-related issues in Canada; Geological Association of Canada; Vancouver, May 2003, invited talk
- ✚ Diamond exploration in Canada; Canadian Institute of Mining, Metallurgy and Petroleum Annual Meeting, Montreal; May 2003; session leadoff speaker
- ✚ The role of geological mapping in addressing water-related issues, Luncheon speaker, Geological Survey of Canada Alumni, April 2003
- ✚ The Search for Diamonds in Canada; Geological Association of Canada Newfoundland Section, February 2003
- ✚ Developments in Canadian geological mapping; Minnesota Geological Survey, February 2003
- ✚ Last millennium sedimentation in Lake Winnipeg: a record of recurring Red River floods; University of Minnesota, February 2003
- ✚ Groundwater monitoring in Canada; stream gauging coordination meeting, St. John's, Newfoundland, October 2002
- ✚ The search for diamonds in Canada; Institute for Lake Superior Geology; Kenora; May 2002; Dinner speaker
- ✚ The search for diamonds in Canada; YMCA Luncheon Discussion Club; Ottawa; February 2002; Luncheon speaker
- ✚ The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum Ottawa Branch, Ottawa; December 2001; Dinner speaker
- ✚ Diamond exploration in Canada; Carleton University, Ottawa; May 2001; Invited lecture
- ✚ Diamond exploration in Canada; 37th International Forum on the Geology of Industrial Minerals; Victoria, British Columbia. May 2001; Session keynote
- ✚ Diamond exploration in Canada; Federal-Provincial Committee on Mineral Statistics; Ottawa. May 2001; invited lecture
- ✚ Diamond exploration in Canada; Canadian Institute of Mining, Metallurgy and Petroleum Annual Meeting, Québec City; April 2001; session keynote
- ✚ Diamonds in Canada; Manitoba Mining and Minerals Convention 2000; November 18 2000; Keynote address

- # The search for diamonds in Canada; Carleton University, Ottawa; May 2000; Invited lecture
- # The search for diamonds in Canada; Martin Collegiate, Regina; March 2000; Invited lectures
- # The search for diamonds in Canada; Sheldon Williams Collegiate, Regina; March 2000; Invited lecture
- # The search for diamonds in Canada; Royal Saskatchewan Museum, Regina; March 2000; Public lecture
- # The search for diamonds in Canada; Miller Comprehensive High School, Regina; March 2000; Invited lectures
- # Exploration Sedimentology; Mining Millennium/Prospectors and Developers Association of Canada. March 2000. Invited lecture
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum Ottawa Branch Luncheon, Ottawa; February 2000; Luncheon speaker
- # Careers in geology; University of Ottawa, Ottawa; January 2000; Invited lecture
- # Geology of the Red River/Lake Winnipeg System; The International Coalition for Land and Water Stewardship in the Red River Basin, Winnipeg; January 2000; Keynote session lecture
- # The search for diamonds in Canada; Sudbury Geological Discussion Group Annual Dinner, Sudbury; December 1999; Luncheon speaker
- # The search for diamonds in Canada; Science and Technology Week, Ottawa; October 1999; Invited lecture
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Sudbury; April 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Trail; April 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Kimberley; April 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Calgary; April 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Chicoutimi; April 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Red Lake; March 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Association of Professional Engineers and Geoscientists of Saskatchewan, Prince Albert; March 1999; Dinner speaker
- # The search for diamonds in Canada; Association of Professional Engineers and Geoscientists of Saskatchewan, Yorkton; March 1999; Dinner speaker
- # The search for diamonds in Canada; Association of Professional Engineers and Geoscientists of Saskatchewan, Swift Current; March 1999; Dinner speaker
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Leaf Rapids; March 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Thompson; March 1999; CIM Distinguished Lecturer presentation
- # The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Montréal; March 1999; CIM Distinguished Lecturer presentation

- ✚ The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Montréal; March 1999; CIM Distinguished Lecturer presentation
- ✚ The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Flin Flon; February 1999; CIM Distinguished Lecturer presentation
- ✚ The search for diamonds in Canada; Canadian Institute of Mining, Metallurgy and Petroleum, Labrador City; January 1999; CIM Distinguished Lecturer presentation