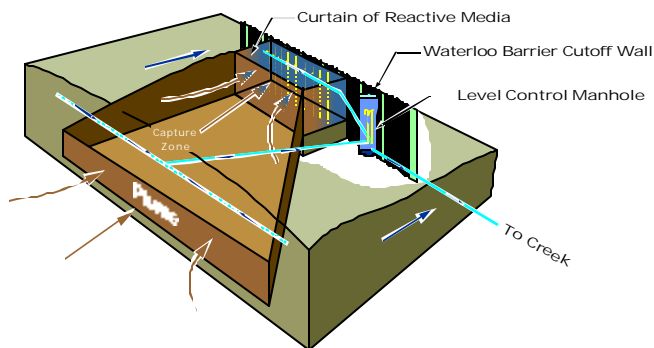


## Wall-and-Curtain Treatment of Contaminated Ground Water By Dr. David R. Lee, Atomic Energy of Canada Ltd.

The Wall-and-Curtain treatment of a ground water contaminant plume has been successfully utilized at a former nuclear facility in Canada. Since its installation in December 1998, the Wall and Curtain has been mitigating the discharge of <sup>90</sup>Sr-contaminated groundwater. Groundwater enters at about 85 Bq/L and exits at < 0.6 Bq/L. The drinking water limit for <sup>90</sup>Sr is 5 Bq/L.

The groundwater contaminant plume was tracked over a 430-m distance for more than 40 years as it moved from a former nuclear-fuel reprocessing facility toward its predicted point of emergence in Duke Swamp. By 1992, the leading edge of this plume appeared to be located below the margin of the swamp and discharge was imminent. Because it behaves biologically like calcium, <sup>90</sup>Sr can accumulate in vegetated areas. Therefore it was desirable to place a strontium barrier between the plume and the wetland.

A method was developed that would put a permeable reactive barrier below the surface and have an accessible pipe as its outlet, thus simplifying the problem of performance monitoring. The method was called the Wall and Curtain, and the major components are shown. A steel sheet-pile cut-off wall provides a hydraulic barrier between the groundwater plume and the down-gradient aquifer. Vertical drainage pipes control the flow rate and the cross-sectional area of the groundwater aquifer that is drawn through the curtain. (In this case the curtain is a granular zeolite, clinoptilolite). An upgradient, horizontal drain diverts shallow, uncontaminated groundwater to the creek and reduces the amount of water traversing the reactive curtain.



Wall & Curtain  
Plume Mitigation

This permeable reactive barrier is unique. The effluent discharges through a pipe for easy monitoring and the capture zone can be hydraulically adjusted in width and depth. It was the first application of permeable reactive barrier techniques in the nuclear industry.

### About the speaker:

David R. Lee did graduate work at the University of North Dakota (methods for measuring groundwater flow to surface waters) and at Virginia Tech. (bioassays for industrial effluents) after serving in Vietnam with a combat engineer battalion. He then worked as a research assistant professor at the University of Waterloo. When he joined AECL in 1979, he continued as an adjunct professor at the university. AECL recognized his inventiveness with two "Discovery Awards," the first for a device that is used to map the beds of surface-waters for groundwater discharge and radioactivity, and the second for a groundwater treatment system that is both passive and hydraulically adjustable.

The meeting will take place on Thursday, January 10 at the Genesee Inn, 1060 East Genesee Street, Syracuse, NY. There will be a cocktail hour from 5:30 p.m. to 6:30 p.m. Dinner will be at 6:30 p.m. and our featured speaker, David Lee, will begin his talk at 7:30 p.m. The cost of dinner is \$17 for members, \$20 for non-members and \$15 for student members. Please RSVP by Monday, January 7 to Bonnie at Parratt-Wolff via e-mail at [bolney@pwinc.com](mailto:bolney@pwinc.com) or 437-1429.

**Directions to Genesee Inn:** To get to the Genesee Inn, take the Teal Avenue exit south from Route 690. Go approximately 1 mile (crossing Erie Boulevard) and turn west onto Genesee Street. The inn is on the south side of the street, between Crouse and University Avenues. The phone number of the inn is 476-4212.



## Calendar

Wednesday, January 09, 2002	HMPGA Monthly Dinner Meeting, Holiday Inn Turf, Colonie, NY. "Geophysical Applications to Environmental Problems", Contact <a href="mailto:Dianne.Trianni@aol.com">Dianne Trianni</a> (e-mail <a href="mailto:AlphaGeo@aol.com">AlphaGeo@aol.com</a> or call 518-783-1805).
Thursday, January 10, 2002	CNYAPG Monthly Dinner Meeting, Genesee Inn, Syracuse. Dr. David R. Lee, AECL, "Wall-and-Curtain Treatment of Contaminated Groundwater." Cocktails at 5:30 p.m. Dinner at 6:30 p.m. Speaker at 7:30 p.m.
Tuesday, February 12, 2002	CNYAPG Monthly Dinner Meeting, Genesee Inn, Syracuse. Dr. Amy Leventer, "Adventures in the Antarctic," at O'Brien & Gere, Syracuse, NY.
Saturday, April 6, 2001  SPECIAL EVENT! MARK YOUR CALENDARS!	LACKAWANNA COAL MINE TOUR & ANTHRACITE HERITAGE MUSEUM. CNYAPG will lead a field trip to the Lackawanna Coal Mine. A coach bus will leave Syracuse at 9:00 a.m. and arrive in Scranton in time for a picnic lunch (provided). After lunch we will spend an hour touring the Coal Mine followed by another tour at the adjacent Anthracite Heritage Museum. Children and spouses are welcomed and encouraged to come too!!! It is anticipated that the bus will arrive back in Syracuse around 6:30 p.m. Signup details and trip information will be contained in future newsletters and on our web page. Call SarahMcCulloch at 607-836-4400 or e-mail <a href="mailto:sarah@geologic.net">sarah@geologic.net</a> with any questions.

HAPPY HOLIDAYS!

A different CNYAPG sponsor's ad will be posted in each issue of the Technologist. In addition to monthly participation in the Technologist, CNYAPG prepares a September, December, and April newsletter for its members. For more information regarding CNYAPG, please contact Bill Morrow, President (315.437.1429, [wmorrow@pwinc.com](mailto:wmorrow@pwinc.com)) or Lynette Mokry, Secretary (315.446.9120, [LM@BBL-INC.COM](mailto:LM@BBL-INC.COM)).



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