Reclamation... Opportunity Knocks

8TH ANNUAL ATLANTIC RECLAMATION CONFERENCE, ARC2015, FREDERICTON, NEW BRUNSWICK

Michele, Coleman, NB Power, ARC2015 Conference Co-chair

THE ATLANTIC RECLAMATION CONFERENCE (ARC2015) was held on October 20-22, 2015, in Fredericton, New Brunswick. The event was co-chaired by Michele Coleman (NB Power) and Diane Praught (CarbonCure). The ARC series is a set of conferences organized by the Atlantic Chapter of the Canadian Land Reclamation Association whereby local aspects of land reclamation are shared and discussed. Over 100 practitioners, consultants, provincial and federal regulators, academics, students, planners and developers were in attendance.

There were 37 presentations on various reclamation topics over two days, and one field trip. Presentation categories ranged from R3 Innovations, Remediation Risks and Project Successes, Fresh and Saltwater Habitat Restoration and Management, Vegetation and Wetland Restoration Successes and Mine Reclamation Advances. Many of the presentations have been posted online on http://atlanticclra.ca/program-2015/. The second day of the conference saw two special sessions, one focusing on the options for the future of a 672MW hydroelectric dam project and the other a speed networking session on special industry related issues and potential research and funding options. Day three was a field trip to the Mactaquac Hydroelectric Dam project.

Kirk Howard (NB Power) giving the pre tour introduction in the recently remodeled Visitor Center at the Mactaquac Dam. October 22, 2015.

(left to right) Cody Bradley (O'Kane Consultants), Kirk Howard, Greg Meiers (O'Kane Consultants), Ed Torenvliet and Danielle Amos (New Brunswick Department of Transportation and Infrastructure).

We thoroughly appreciate the generosity of our many sponsors: Research and Productivity Council (RPC) and Environmental Risk Information Services (ERIS), which were Gold sponsors, and AGAT Laboratories, AMEC Foster Wheeler, Dillon Consulting, Gemtec Consulting Engineers and Scientists, Genome Atlantic, Maritime Hydroseed, NB Power, NS Lands and Springboard, which were all Silver sponsors. Their generosity allowed the conference to host coffee breaks as well as help support students through reduced registration fees and the participation scholarship program. We had students in attendance from the University of New Brunswick (UNB), New Brunswick Community College (NBCC) and St. Mary's University in Halifax, and all benefitted from the generosity of the sponsors. Scholarship award winners were Allen Beck and Allison Dykstra from UNB and Christa Skinner and Carly Wrathall from St. Mary's University. All of the student presentations have been posted on the Atlantic Chapter website.

The benefits of including students in a conference are enormous. We are mentoring those that will soon be entering the work force and may one day be replacing us both in our jobs and with

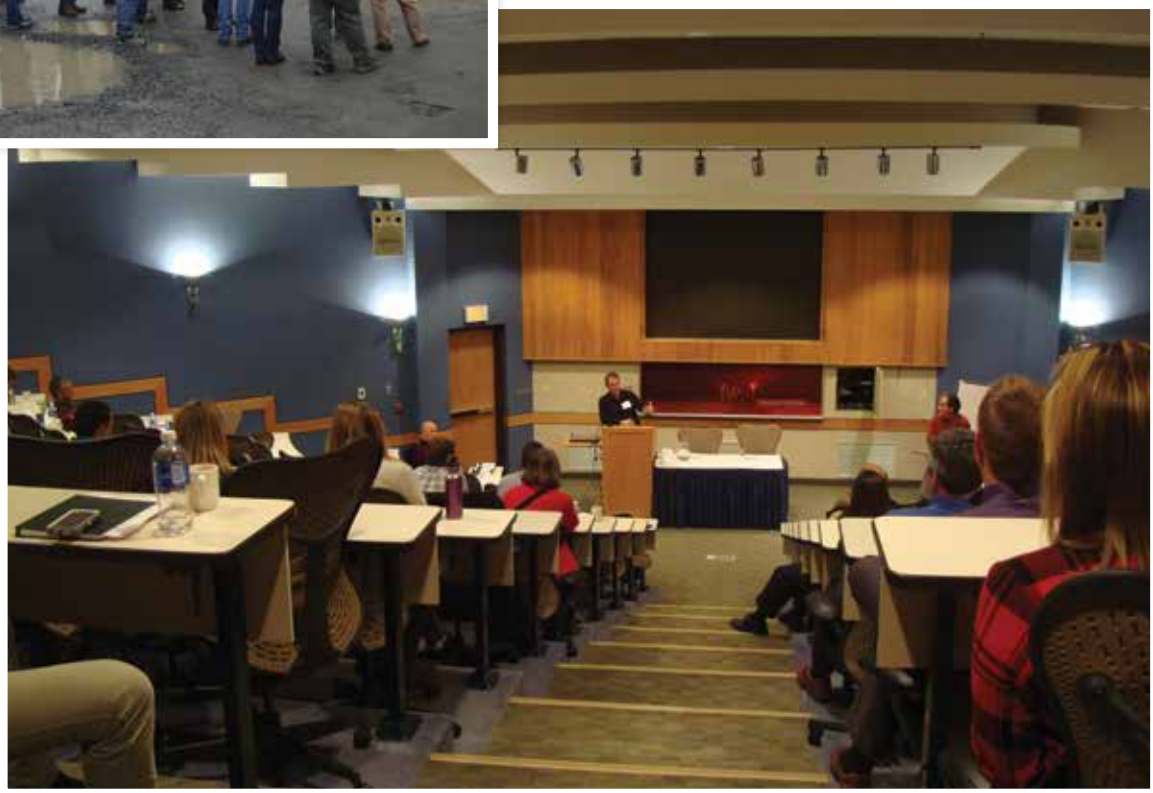
Tour group in powerhouse above one of the turbine generating units at the Mactaquac Dam. October 22, 2015.

Tour group looking down into one of the turbine generating units at the Mactaquac Dam. October 22, 2015.

contributions to the CLRA. Their enthusiasm adds energy to the event as they discover new areas of potential job opportunities and feel the thrill of hearing about successful reclamation projects. Hearing a young person talk about a presentation using words like "that's where it's at- that is so critical, that's what I want to do!" can really lift your spirits. Many thanks to Linwood Dunham, the lead instructor in the NBCC Environmental Technology program in Miramichi, New Brunswick, who has made ARC attendance for the second year students part of their education. These students have attended ARC conferences in New Brunswick and Nova Scotia for four out of the past five years, including the National CLRA Conference in Sydney, Nova Scotia in 2012. Linwood forwarded a selection of the comments from the students after the conference. It is humbling when you realize what an impact you can have on a young person when you extend the same courtesies that your mentors extended to many of us when we were starting our careers. More on this in the guest curmudgeon article in this issue of Canadian Reclamation.

A special session was held on the second day which focused on the options for the future of the Mactaquac 672MW dam project. For more details about the Mactaquac Generating Station, please refer to the insert story. The powerhouse at the dam is being impacted by Alkali-Aggregate Reaction (AAR), which causes expansion of the concrete. This problem affects hundreds of stations worldwide, and the result is that the Mactaquac powerhouse is expected to reach the end of its life by 2030, despite all of the

Tour group outside of Mactaquac Generating Station Dam, looking at the concrete dam holding back the reservoir. October 22, 2015.

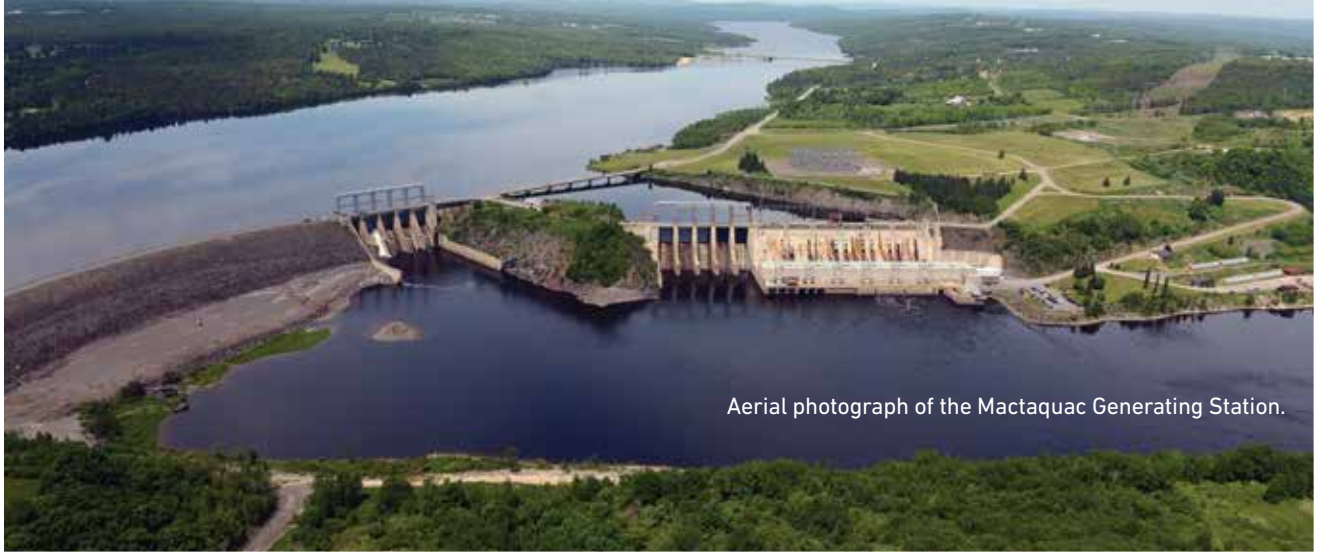


Sean Dunbar, owner of Northampton Brewing Company, the maker of Picaroons Traditional Ales, talking about the environmental and regulatory challenges of restoring an abandoned historical railroad roundhouse into a trendy micro-brewery and community gathering place in Fredericton, New Brunswick.

remedial efforts being deployed to mitigate the concrete expansion. Various studies and public discussion have been ongoing since 2013 about the investigations of the three options: rebuild a new powerhouse, disable the current powerhouse and allow the river to flow through new sluicegates, and remove the dam and powerhouse completely and fully restore the river. This would be the largest dam removal project in the world to date, so along with all the engineering options being investigated, the presentations highlighted the watercourse and fish impacts of the dam project with respect to all three options.

"The location of the conference rotates annually and I felt that it was important that it be hosted by Fredericton this year, given the major connection between the various options being explored with the Mactaquac Project and the impact on both land and waterway restoration/reclamation and discussions on planning and developments on ecosystems," says Michele Coleman. "The opportunity and benefits to have this information shared with a population of experts from multi-disciplinary backgrounds who participate in projects of this type was a once in a career event." Tour participants included a cross section of the conference audience including a few that had previous experience with dam removal consideration projects – but nothing of this magnitude. Nova Scotia Lands Executive Director, Frank Potter, commented, "NS Lands Inc. owns two dams/fish ladder structures, one of which is a former industrial water source that is now no longer needed. We have contemplated the option of removing the dam and we found this presentation extremely helpful if we ever decide to go this route of removing the dam."

Comments from the Mactaquac presentations and the tour ranged from: "never thought about that before" to awe about the enormity of the background research project and the physical size of the dam (both inside and out), to discussions about replacement green energy versus other options. "This was a



Aerial photograph of the Mactaquac Generating Station.

Background on the Mactaquac Project

The Mactaquac Generating Station is a run-of-the-river hydroelectric generating facility located west of Fredericton on the Saint John River. The station began operating in 1968, and has the capacity to generate approximately 670 megawatts of energy using the flow of water through six turbines. The station supplies about 12 per cent of New Brunswick homes and businesses with clean, low-cost power.

The generating station complex contains the generating station or powerhouse, an embankment dam consisting of a rock-filled structure sealed by clay and two concrete spillways, which form an arch across a narrow section of the Saint John River. The complex rises 40 metres in height above the river level, creating an upstream reservoir (referred to locally as the "head pond") that covers 87 square kilometres and extends 96 kilometres upstream, near Woodstock, New Brunswick.

The dam and powerhouse complex are a "run of the river" design, meaning that the reservoir has no additional holding capacity in the event of unusually high water flows, such as during the spring freshet. This water is passed directly through the spillways via a procedure called the "opening or lifting of the gates". During the spring freshet, this event itself is worthy of a viewing from the south side of the river.

The Mactaquac Generating Station has a fishway to catch salmon and transport them upriver. An Atlantic Salmon fish hatchery is located immediately downstream from the dam.

The dam also serves as a locally important public road and bridge across the Saint John River, linking provincial highways on the south and north sides of the river.

wonderful opportunity to explore and share the project considerations with both New Brunswick residents, many of whom had never been on a tour of the physical dam before, and our neighboring Nova Scotians," says Michele Coleman.

Genomics and the Environment Research Connector Event brought in additional researchers and representatives from federal and provincial agencies to discuss research and development funding opportunities for a rapid fire afternoon of information and networking - like speed-dating for those seeking innovation. Companies and researchers had three minutes to share their interests and expertise. Opportunities to explore further research collaboration were conducted in the networking break that followed the presentations. This event attracted many new faces, some of which had never heard of CLRA; therefore, we benefited from the extra exposure to potential new members.

Since several of the presentations were about the redevelopment of an abandoned railway roundhouse brownfields site into a brewery by removing the contaminants but preserving the original building, the evening activities consisted of dining in local pubs that highlighted the beers that would be brewed in the new brewery once it opened. Redevelopment of brownfield sites within cities is critical for preserving the character of many of our older neighborhoods while instilling a revitalization of commerce or accommodating housing needs.

The next ARC event planned for 2016 will be in Halifax and will celebrate the 15th anniversary of the Atlantic Chapter of the CLRA.