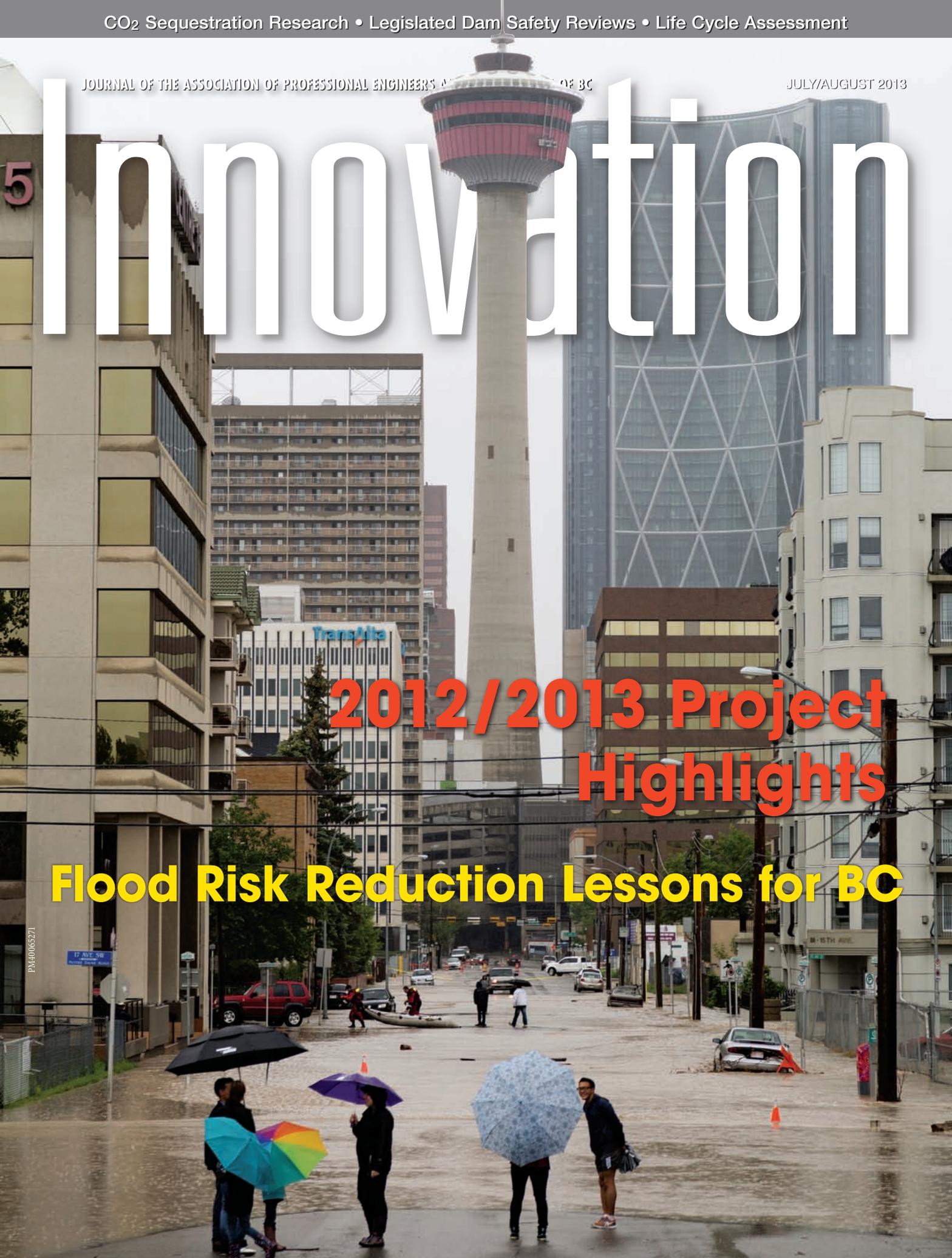


# Innovation

**2012/2013 Project Highlights**

**Flood Risk Reduction Lessons for BC**

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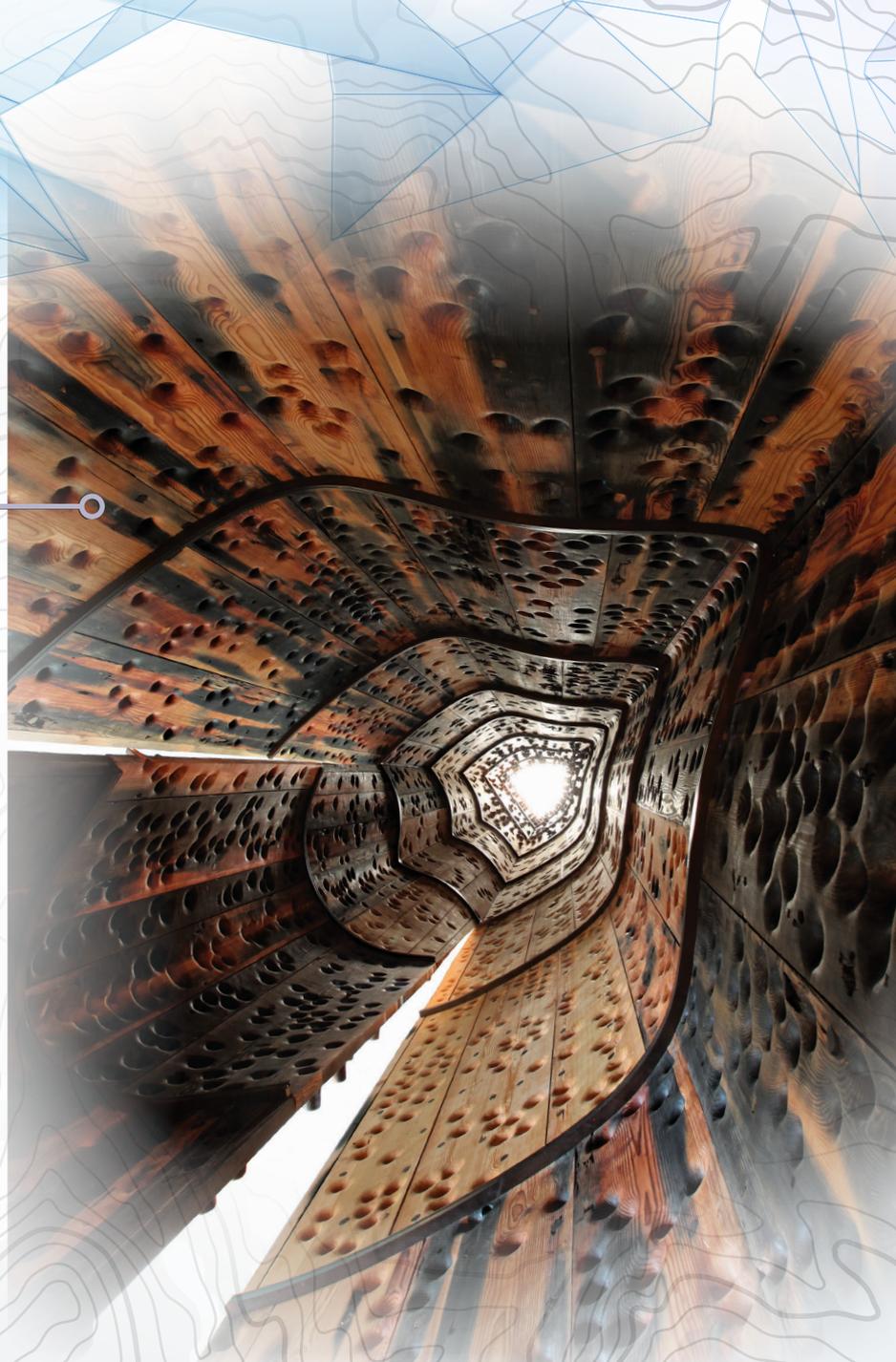
# 2012 • 2013

## PROJECT HIGHLIGHTS

The 2012/2013 Project Highlights pictorial showcases the engineering and geoscience work of APEGBC members in BC and around the world. *Innovation* thanks all the individuals and companies that responded to our annual call for project photographs.

### The Wawona Sculpture

The Wawona Sculpture is a 56-foot-tall kinetic and permanent installation by Northwest artist John Grade at the Museum of History and Industry in Seattle, Washington. Over 130 cubic feet of computer-cut and hand-carved timber planks, reclaimed from the dismantled Wawona Schooner, are entwined with 5,500 lbs. of water-jet-cut steel ribs and concealed hanger rods. The assembled parts create a form that evokes the shape of a ship's hull, suspended vertically from the museum roof. The base of the artwork hovers 12 inches off the floor, creating an enclosed volume of space accessible to museum patrons. Arup was engaged from the onset of concept design to develop performance objectives for the sculpture when subjected to human-induced, and seismic loads. In addition, Hans-Erik Blomgren, P.Eng., from Arup assisted the artist in developing suitable materials, and construction methods involving digital fabrication of the wood planks and steel components directly from a 3D computer model.





## UBC Bioenergy Combined Heat and Power System

UBC, Nexterra and GE commissioned a groundbreaking energy-from-renewable-waste combined heat and power system in September 2012. The Bioenergy Research and Demonstration Facility is North America's first commercial demonstration of a transformative system that combines Nexterra's proven biomass gasification technology and proprietary syngas clean-up and thermal cracking system with GE's high-efficiency internal combustion gas engines. The combined heat and power plant is housed in an architectural designed facility featuring innovative cross-laminated timber construction. Operating on engine-grade syngas, the system produces 2 MW of renewable electricity and generates 3 MW of thermal energy for campus heating. It displaces 12% of UBC's natural gas consumption, reduces GHG emissions by 5,000 tonnes/year, and offers 20% higher electrical efficiency and lower water consumption than conventional technologies. Nexterra was involved in the project development, design, engineering, construction and commissioning.

*Owner: UBC. Partners: Nexterra Systems, GE Energy, McFarland Marceau Architects.*

## Jericho Beach Restoration

In 2010, the Vancouver Parks Board approved removal of the Jericho marginal wharf for public safety and ecological restoration. This provided a unique opportunity to return the shoreline to its natural state with a well-connected native plant habitat transitioning from beach to woodland forest. The structure's demolition, including removal of 700 creosote treated piles, was completed in 2011. The park landscaping and ecological features were completed in the spring of 2013. The shoreline design used a combination of structural rock to resist erosion and natural beach areas to create a stable shoreline. Coarse sand and gravel were incorporated into the upper beach to resist wave erosion and enhance forage fish spawning.

*Owner: Vancouver Board of Parks and Recreation (Rosaline Choy, EIT; Tiina Mack, BCSLA). Consultant team: Moffatt & Nichol (Michael Cho, P.Eng.), Sharp & Diamond Landscape Architecture, Raincoast Applied Ecology. Contractors: Vancouver Pile Driving, Sumas Remediation Services.*

