

Hats Off to “Merritt’s Ditch”: A Portrait of the Welland Canal

Written & photographed by Sarah King Head except where noted.

Take a simple engineering challenge. How do you use gravity to raise a ship?
With lots of water, that’s how – especially if that ship is climbing
the Niagara Escarpment on the Welland Canal.

The region’s earliest settlers all knew that a journey from the St Lawrence River system and Lake Ontario over the Escarpment and into Lake Erie and the other Great Lakes involved a perilous portage around the geologic feature’s most iconic aspect: Niagara Falls.

It was not until the end of the American Revolutionary Wars at the end of the 18th century, however, that a combination of geopolitics

and market forces compelled British North America to find a more permanent solution – one that linked the centre of the continent with the Atlantic Ocean and climbed the “mountain.”

Upon reflection, it is simple to appreciate the Welland Canal’s accomplishment compared to other canals worldwide. Indeed, one has only to look at the impressive geology it overcomes – the nearly 100 metres of Silurian

shale that comprise the body of the Niagara Escarpment beneath its hard dolomitic limestone capstone. It also contends with two distinct geographic terrains, above and below the mountain.

But two centuries ago, such an undertaking was considered to be too audacious and risky for governments, let alone an individual, to undertake.

Enter William Hamilton Merritt in the early 1800s.

The American-born, United

Empire Loyalist was not alone in petitioning the House of Assembly for the Province of Upper Canada to receive a charter for the construction of a canal in 1818, but it was ultimately down to Merritt’s acumen and financing that the Welland Canal did indeed become a reality.

Ever the pragmatist, Merritt realized that success would be achieved in following natural water courses as closely as possible. From Lake Erie, his

canal flowed down the Niagara River before entering the Welland River at Chippawa. Moving upstream, it wended its way to Allanburg and via a “Deep Cut” to Port Robinson before beginning its descent of the Escarpment at Thorold. From Thorold, it passed through Merrittton into St. Catharines and along Twelve Mile Creek, exiting at Port Dalhousie into Lake Ontario.

▲ View towards St. Catharines Skyway from Lock 6. PHOTO BY SEAN YOUNG.

Construction began on November 30, 1824, with the first sod being turned at Allanburg by Merritt's business partner and president of the Welland Canal Company, George Keefer.

And, five years to the day later, the Welland Canal would see Merritt standing proudly on the deck of one of the two vessels to make that first upbound journey, the schooner called Ann and Jane.

Four Canals

In spite of this success, construction had been fraught with financial crises and controversy. Indeed, it became immediately clear that the canal's 40 wooden locks were neither large nor robust enough to accommodate much maritime traffic. In response, the Government of Upper Canada assumed ownership and financing of the canal, and plans were drawn up for its reconstruction with stone-faced locks and by cutting a direct

ship channel through to Port Colborne on Lake Erie.

Both the second and third iterations of the Welland Canal, opened in 1845 and 1887, responded to ever larger vessels and the demands of emerging domestic and international markets by carving an increasingly direct route between the lakes, reducing the number of locks and enlarging their capacities.

By 1932, the canal's course ran from Port Colborne, skirting eastward of Welland and St.



▲ The M.V. Rt Hon Paul J Martin upbound to Lake Erie at Lock 4. PHOTO BY SEAN YOUNG.



▲ Captain John Carlson, M.V. Cuyahoga, wearing top hat at the launch of the 2013 navigation season.



▲ From left: RCMP Constable Yolande MacArthur, Marine Security Operation Centre, Niagara-on-the-Lake, Captain John Carlson, M.V. Cuyahoga, First Engineer George Lundrigan, M.V. Cuyahoga, and RCMP Staff Serjeant Steve Brown, Marine Security Operation Centre, Niagara-on-the-Lake.

Catharines, to Port Weller by means of just eight locks. Of these, its world-class engineering credentials were established with a series of three twinned flight locks between St. Catharines and Thorold. Stretching nearly 1.25 km over an incline of

42.5 metres, Locks 4, 5 and 6 make it possible for vessels to pass in opposite directions simultaneously.

The first phase of an unrealized fifth canal was construction of a bypass around Welland in 1973, which

linked Port Colborne and Port Robinson more directly.

Annual Top Hat Ceremony
What began as "Merritt's ditch" in 1829 is today regarded as a testament to the engineering ingenuity of the pioneers

who first settled the Niagara Peninsula.

This remarkable achievement is celebrated in many ways each year, not least with the opening of the canal's navigation

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H.M.C.S. Ojibwa upbound to Port Colborne. PHOTO BY SEAN YOUNG. ▼



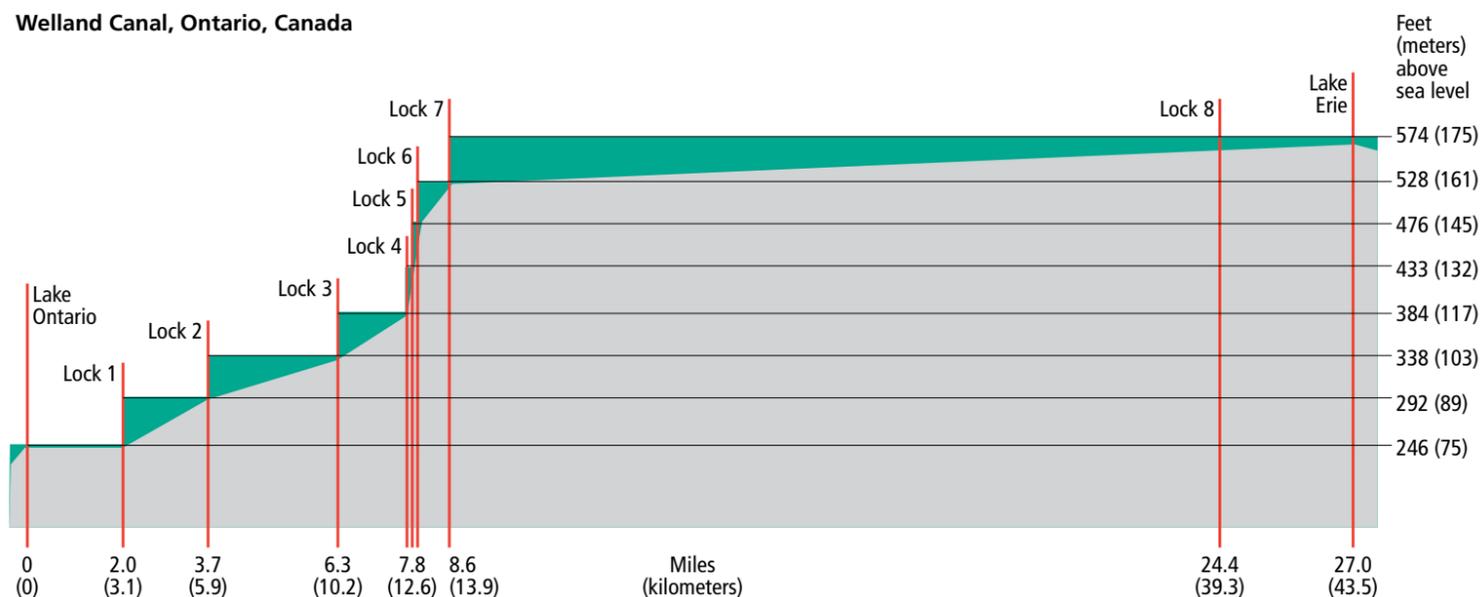
▲ This map of the Welland Canal shows the location of the eight locks needed to sail between Lakes Erie and Ontario, which is at a much lower elevation. Note the closeness of Locks 4, 5, 6 and 7 at the Niagara Escarpment. Niagara Falls, which goes over the Escarpment, is the reason that the Niagara River needs to be bypassed. Map by Agyle courtesy of Wikimedia Commons.

season at the annual Top Hat ceremony during which a ceremonial top hat is presented to the first upbound ship captain. Inaugurated in 1947, the ceremony is on to its third top hat – and one that is no longer silk but fashioned of beaver felt.

Explains Kathleen Powell, the curator of the St. Catharines

Museum: “We decided to have the hat made of materials that better reflect those used during the era of Merritt. Back in 1829, beaver pelts were used to construct top hats because of their distinctive water repellant properties. And today, they serve to remind us of Canada’s early fur-trading history.”

Welland Canal, Ontario, Canada



▲ This profile drawing of the Welland Canal shows the length of the canal with distances marked along the bottom. Differences in elevation are given between Lake Ontario, left, and Lake Erie, right. Elevations

She notes that the original hat is in the St. Catharines Museum collection along with other artifacts from the First Canal, including an original shovel and a model of the Ann and Jane.

On March 22, Powell presented this top hat to Captain John Carlson of Phelps, Ontario, the master of the M.V. Cuyahoga, the first upbound vessel for the 2013 navigation season.

The comparison between the transit of the M.V. Cuyahoga and that of the Ann and Jane in 1829 is striking. Not only in terms of size, comparing the self-unloading, bulk carrier with that of a schooner, but also lock capacity. While a total of about one million litres of water were displaced between all 40 locks in 1829, a modern vessel today will displace an astonishing 91 million litres of water at each one of the eight locks.

Moreover, modern ships are regulated by increasingly strict environmental controls. The M.V. Cuyahoga, for instance, was the first vessel on the Great Lakes to be repowered with a tier-1 emissions-compliant engine at

the beginning of this century. Legislation like this has actually made the Great Lakes St. Lawrence Seaway system fleet superior to other transportation modalities, specifically trains and trucks, in terms of greenhouse gas emissions and fuel efficiency.

In the same way, bilge management regulations control the discharge of harmful waste and ballast into the marine environment.

Over the course of its history, it is easy to see how the Welland Canal has been able to respond and adapt to new economic, social, political and technological realities. It is also possible to see it as a barometer of change, a reflection of the people who shaped, and continue to shape, the Niagara Peninsula. **NEV**

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of the eight locks are listed on the right side. The centre of the drawing shows the distinctive edge of the Niagara Escarpment. Drawing by Daniel M. Short courtesy Creative Commons, Wikimedia Commons.