# Rehabilitating the M1 Canal

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The M1 Canal provides water for increased municipal, industrial, agricultural and environmental needs south and east of Saskatoon. The Ministry's Irrigation Branch is hard at work maintaining and rejuvenating its infrastructure.

Constructed in 1967, the canal consists of a 22.5-kilometre water supply canal that delivers water from Lake Diefenbaker to the Broderick Reservoir. This regional water system serves six reservoirs, six urban centres, three potash mines, 55,000 acres of irrigated land and 14 Ducks Unlimited Canada projects via the South Saskatchewan River Irrigation District (SSRID) and Saskatoon South East Water Supply System (SSEWSS) and now has come the time for its rehabilitation.

In 2009, the Ministry contracted an engineering consultant to develop an asset management plan for the M1. This plan recommended the complete replacement of the surface liner and water control structures as well as the rehabilitation of the culverts under the canal. A water balance study was also completed that indicated the capacity of the M1 should be increased by 50 per cent to 28 $m^3$/second in order to address the region's anticipated increase in water demand.

The following year, the Ministry contracted the rehabilitation of the three cross drains that posed the greatest risk to the continued operation of the canal. The cross drains are culverts that allow runoff to flow underneath the canal. An entire operating season could be lost if one of these drains collapsed, but the rehabilitation of the cross drains was successfully completed by installing cured in-place plastic structural liners that are expected to increase the service life another 50 to 100 years.

In 2011, the Ministry contracted the first kilometre of the canal rehabilitation including topsoil stripping and replacement, the removal of the old surface liner, interior bank excavation and trimming, foundation construction, buried liner installation, and gravel armour supply and installation. These techniques have been successfully used in Alberta's irrigation district canals for many years.

The rehabilitated M1 Canal will give over 50 years of continued service to the SSRID and SSEWSS for the whole region's growing water needs.

Figure 2: "Before" - deteriorated cross drain under the M1 Can

Figure 3: "After" - cross drain rehabilitated with cured-in-place
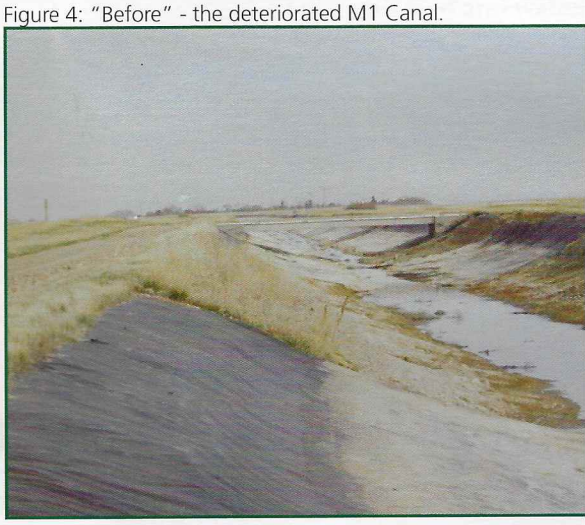
Figure 4: "Before" - the deteriorated M1 Canal.