



SUBJECT: 2012 Greater Vernon Water Master Water Plan
Technical Memorandum No. 5.
Independent Agricultural System

Summary date: August 2015 / Updated: January 2016

TM5 PURPOSE:

A large part of the GVW water system was initially built to support agriculture, which is a very important industry in the region. Domestic users were connected to the water system in the 1960s as water delivery switched from canals to a pressurized water distribution system. This was at a time when water quality standards were low and treatment for potable water was a minimum. Legislation changed in 2001 with the enactment of the *Drinking Water Protection Act*, requiring a higher level of treatment for water used for domestic purposes. However, agriculture does not require treated water for crops/livestock. The costs (capital and operational) are much higher to treat and distribute water to a potable standard than to provide non-potable (raw) water for irrigation. To reduce the stress on the domestic system and lower the cost of providing agricultural water, TM5 examines the capital costs to separate the domestic system from the agricultural system to provide non-potable water for irrigation and treated water for domestic use.

METHODS:

To assess the viability of a separated agricultural system, the following was completed in TM5:

- Review of current agricultural practices to assess future demands including land use (e.g. Crop or livestock type), irrigation (sprinkler type/watering methods) and historic water demand,
- Compiling unit construction costs for facilities and pipe main that are used consistently in the MWP. Estimates are considered Class D and include 45% for contingency and engineering,
- A valuation of the current GVW system to obtain replacement cost based on current standards and construction costs,
- A valuation of system separation options and assessing potential phasing of separation projects, and
- Examining other opportunities to reduce the demand on the DCWTP include increasing storage on Goose Lake and sourcing water from Swan Lake, BX Creek, City of Vernon reclaimed water system and/or Okanagan Lake.

RESULTS:

The system valuation found the total replacement value of the GVW System to be **\$619.6 million (TM5 Table 4-3)**. This table includes the DCWTP, MHWTP, 19 storage tanks, 44 pump stations, 650 km of pipeline, 7 reservoirs, 4 intakes, 22,000 domestic and 1,050 agricultural water services plus all other associated infrastructure.

The table below outlines capital works required to achieve complete system separation of the domestic and agricultural supplies, for a total of **\$80.9 million**.

The costs are separated into projects that represent distinct agricultural areas that can be completed as a separate and independent construction project.

The total replacement costs for a separated irrigation distribution system, not including pumping and other required infrastructure, was estimated to be **\$137.2 million**.

TM5 – Table 6-2 Summary of cost of Infrastructure within each Agricultural Zone.

Project	Construction Cost Estimate	Replacement Cost
Existing Separation Projects at the time the MWP was developed		
Bella Vista		\$ 7,299,000
West Swan Lake		\$ 2,406,000
King Edward Stage 1		
Von Keyserlingk		
Lavington/Coldstream		
Binns - Stage 1C (Completed 2013)	\$ 445,000	\$ 3,196,000
Springfield (Completed 2012)	\$ 2,740,000	\$ 4,064,000
Antwerp Springs	\$ 3,178,000	\$ 3,160,000
East Buchanan	\$ 2,242,000	\$ 4,676,000
Vimy	\$ 1,739,000	\$ 3,834,000
King Edward Total	\$ 874,000	\$ 7,136,000
Von Keyserlingk Total	\$ 861,000	\$ 3,914,000
Coldstream	\$ 1,350,000	\$ 4,658,000
East Vernon		
Middleton Mountain	\$ 3,670,000	\$ 3,239,000
Hillview (East Middleton)	\$ 7,467,000	\$ 6,805,000
South BX PZ 585	\$ 3,504,000	\$ 5,854,000
South BX PZ 633	\$ 1,400,000	\$ 3,173,000
Pleasant Valley PZ 535	\$ 3,282,000	\$ 6,651,000
North BX PZ 585	\$ 2,655,000	\$ 4,012,000
North BX PZ 610	\$ 1,238,000	\$ 3,198,000
Communities		
East Swan Lake	\$ 3,454,000	\$ 4,979,000
Old Kamloops (Completed 2013)		\$ 9,055,000
Coldstream West	\$ 1,522,000	\$ 941,000
Stepping Stones	\$ 2,390,000	\$ 2,375,000
Sub-Total	\$ 44,011,000	\$ 94,625,000
Engineering (15%)	\$ 6,601,650	\$ 14,193,750
Contingencies (30%)	\$ 13,203,300	\$ 28,387,500
Total Cost	\$ 63,815,950*	\$137,206,250

In addition to the construction costs listed above, the following water transmission projects would also be required for domestic use to achieve complete separation: \$5,000,000 for East Vernon to West Vernon, \$1,750,000 for Binns and \$5,000,000 for Lavington with \$5,288,000 for contingency and engineering for a total cost of \$80,855,000 to achieve full separation.