



Crowe Valley
C o n s e r v a t i o n

Asset Management Plan- DRAFT

Approved by Board of Directors:

Effective Date:

Motion No:

Table of Contents

Introduction	- 2 -
Legislation	- 2 -
Water Control Infrastructure	- 4 -
Funding Strategy	- 6 -
Operational (Supporting) Assets	- 8 -
Appendix A: Dam Repair Estimates.....	- 9 -
Marmora Dam.....	- 9 -
Belmont Dam	- 10 -
Wollaston Dam.....	- 11 -
Oak Lake Dam	- 12 -
Allan’s Mill Dam	- 12 -
Steenburg Dam	- 12 -
Crowe Bridge Weir	- 13 -

Introduction

The Crowe Valley Conservation Authority's (CVCA) primary area of focus is water management. This is a direct result of the history of the CVCA, its ongoing evolution and recent changes to the Conservation Authorities Act. An integral part of water management is the underlying infrastructure in place to support the objectives of protecting peoples' lives and their property. The CVCA assets are literally the backbone of this organization and need to be maintained for operation at all times, especially in the event of a 1 in 100 year flood scenario. Although these assets traditionally have longer time horizons than most other assets, the CVCA must ensure the public and our member municipalities there must be a strategy to replace the dam and weir infrastructure network of assets under the ownership of the Authority.

In addition to the dam infrastructure, the CVCA has numerous other supporting assets to enable the smooth operation of 1) its primary assets; 2) the administrative network 3) non-mandatory programs and services requested by the Authority's municipal partner(s) and 4) other non-mandatory programs and services initiated by the CVCA.

It is the intent of this organization to outline a feasible asset management blueprint to support the operational needs of all three Categories as outlined in the Inventory of Programs and Services.

This plan will provide an overview of the assets, their current condition, the maintenance schedule and the CVCA's financial goal to support existing structures to extend their "shelf" life and ultimately their replacement.

Legislation

Conservation Authorities in Ontario have a legislative responsibility to develop a plan for the management of assets as outlined in the Conservation Authorities Act.

Under the Conservation Authorities Act, Ontario Regulation 686/21: Mandatory Programs and Services states:

Infrastructure

Section 5

(1) Subject to subsection (3), an authority shall provide programs and services that support the operation, maintenance, repair and decommissioning of the following types of infrastructure the authority owns or manages:

- 1. Any water control infrastructure, the purpose of which is to mitigate risks to life and damage to property resulting from flooding or to assist in flow augmentation.*
- 2. Any erosion control infrastructure.*

(2) Programs or services provided under subsection (1) shall include the following components:

1. *The development and implementation of an operational plan on or before December 31, 2024.*
2. *The development and implementation of an asset management plan on or before December 31, 2024*
3. *The undertaking of any technical or engineering studies necessary to ensure the proper operation and maintenance of the infrastructure to which the program or service applies.*

(3) If an authority enters into an agreement with an owner of infrastructure mentioned in paragraph 1 or 2 of subsection (1) to manage the infrastructure on the owner's behalf, the authority shall provide the programs and services to operate, maintain, repair and decommission the infrastructure only in accordance with its obligations under the agreement.

(4) An authority may update the plans mentioned in paragraphs 1 and 2 of subsection (2), from time to time, as the authority considers it advisable.

The asset management plan was developed with input from all areas of staff expertise regarding assets utilized in their daily activities.

In 2017, the CVCA Board recognized the need to develop and work toward a healthy reserve to replace assets at the time of their expiration of their amortization (life) period or if the asset is beyond repair before it expires. At that time, the operational assets were the primary focus since life spans were shorter and the need for a replacement schedule was crucial.

A reserve fund strictly for dam infrastructure assets has not been developed until the adoption of this asset management plan.

The CVCA relied on the best available data to develop this AMP, including staff expertise, dam safety assessment reports, operational procedures, and the annual budgeting process.

The long term objective is for the CVCA to manage dams, weirs and the remaining assets in a cost effective manner to support the programs and services required to deliver for the protection of people and their assets. This plan will also help the CVCA's municipalities be aware of the demands on the CVCA. In turn, this will create an environment of cooperation with no surprises to the municipalities and their financial concerns.

In addition, the plan will include a time horizon for these assets to ensure targets are met in a sustainable manner over the long term.

CVCA Assets

CVCA assets are placed into the following general categories:

1. Water Control Infrastructure – dams, weirs and components (overhead gantries, walkways)
2. Lands
3. Buildings
4. Land Infrastructure – trails, parking lots, kiosks
5. Vehicles
6. Flood and Watershed Monitoring Equipment
7. Office Equipment – Computers

Water Control Infrastructure

CVCA staff conduct numerous stop log adjustments at dams throughout the year. During these adjustments, a visual inspection to identify minor maintenance and repairs is conducted. In addition to monitoring the dams, staff are inspecting for signs of vandalism and ensure everything is properly locked. CVCA is considering the installation of cameras to remotely monitor the dams at any time.

Annual inspections are conducted at each dam and weir by CVCA staff. Although these inspections are not conducted by professional engineers, staff with 35+ years experience are able to identify general concerns, conditions of concrete, take photographs and document issues. Commonly, dam issues are spread out of a fairly lengthy time span and can easily be tracked and identified, especially with the familiarity of those who work on the dams virtually every day of the year.

Dam safety assessments/reviews are usually done on a 10 year cycle, which is based on legislative or industry best practices. These assessments are completed by a qualified engineer and evaluate all aspects of the dam, including but not limited to the overall integrity of the dam, dam stability, condition of the concrete, operation and maintenance and any other improvements required.

After the assessment is complete, CVCA staff review what changes/improvements need to be made and the timelines to complete the recommended repairs. This information will then be prioritized and addressed based on funding availability, repair timelines, ongoing projects, and staff resources to manage projects.

Arriving at this assessment stage is not only a launching point for future expenditures, but a cost of its own which must be factored into the average annual cost.

The future long-term viability of the dam depends on the number of repairs of its various components and the “tipping point”, whereby it is no longer feasible to make the repairs and a total dam reconstruction will need to be undertaken.

CVCA staff have, based on experience and dam safety assessments have estimated the remaining useful lives to create a long term forecast of repairs to extend the life of a water control structure and the yearly funds which should be set aside into reserves over the next three decades to help offset expenses during that time frame and expenditures for the following three decades.

This strategy dovetails with the current Provincial funding made available to conservation authorities through the Water Erosion Control Infrastructure (WECI) program. This WECI funding is matching funding which has allowed conservation authority projects to be completed which may not otherwise have been done without this financial assistance. Unfortunately, the program has been consistently oversubscribed which shows the demand is greater than the funding available. As a result, if this trend continues, then future funding for projects is certainly not a guarantee with demand outstripping supply and a ranking system which makes it difficult for smaller rural conservation authority projects to compete with larger urban project submissions. This is perhaps the greatest risk to the execution of the plan along with any external factors beyond the control of the CVCA and its member municipalities (such as legislative changes affecting the funding structure for conservation authorities).

Moving forward with this plan will provide municipalities with the information they require to prepare their budgets for upcoming CVCA capital revenues required to maintain the water control infrastructure. This approach is key to spreading out the expenditures over approximately the latter half of the life of the structure to position the CVCA to handle expenditures when required and not wait for potential uncertainty of funding. The necessary funding will be in place and not a significant surprise to the municipalities or the taxpayer.

General Characteristics			
Water Control Structure	Age/Estimated Remaining Life	Condition	Functionality
Marmora Dam	47/53	Good	As intended – measures required to meet ODSG
Belmont Dam	49/51	Good to Excellent	As intended – needs upgrades to meet ODSG with respect to freeboard (stability has been addressed)
Wollaston Dam	58/42	Good	As intended – needs upgrades to meet ODSG with respect to stability
Allan Mills Dam	n/a	n/a	Not operational
Oak Lake Dam	n/a	n/a	As intended
Steenburg Lake Dam	n/a	Good	As intended
Crowe Bridge Weir	n/a	Good	As intended

Replacement Cost Estimates	
Water Control Structure	Estimated Cost
Marmora Dam	10,000,000
Belmont Dam	5,000,000
Wollaston Dam	2,500,000
Allan Mills Dam	0
Oak Lake Dam	50,000
Steenburg Lake Dam	2,500
Crowe Bridge Weir	1,000,000
Total	18,552,500

The adoption of this strategy to extend the lifecycle of water control structures through inspection, regular maintenance, proactive repairs and the securement of funding on an annual basis will mitigate risk to the CVCA and its member municipalities, while protecting the public and augmenting flows for the health and welfare of residents.

The CVCA will create a database of information of each water control structure which will also include photos and any other relevant information collected during inspections. This database will also manage risks associated with succession and the passage of key knowledge from senior experienced staff to new hires.

Funding Strategy

Annual expenditures have been identified in the preceding charts and are to be used as a guide. The expenditure forecast is also based on the current repairs identified in dam safety assessments which will also need to be updated (except perhaps for Marmora dam and the Crowe Bridge weir). Once the assessments are completed, the expected costs will likely increase. The two primary drivers of this result will be inflation and the number of repairs. Current data available to the CVCA is approximately 10 years old and with an older group of assets, it must be considered the additional decade of wear and tear will result in more repairs.

The CVCA has been allocating approximately \$25,000 into reserves toward capital infrastructure repairs for dam structures in the past two years. Although this has been a positive and necessary step forward in the adoption of an asset management plan, the reality of the current situation dictates a more aggressive solution.

The amount to cover both the maintenance and repairs and the replacement expenditures of the water control structures is approximately \$20,423,280 based on current data available to the CVCA.

Therefore, staff recommend the adoption of an annual contribution rate to match WECl contributions based on the requirements for all assets to complete ongoing maintenance, make necessary repairs to extend the life of the CVCA's assets when identified and the replacement cost of each individual assets (based on an inflation adjusted amount). This contribution rate would be based on the average lifecycle of the CVCA's assets and is currently estimated at 50 years.

Or, choose one of the following options:

All options expect funding from the provincial WECl program contribution rate to remain at 50%.

- 1. Status quo – ongoing maintenance, repairs based on engineer's recommendations, health and safety concerns and staff operating experience.***
- 2. Maintain the current status quo for the life of the dam and then decommission the structure***
- 3. Adopt the correct amount for ongoing maintenance, repairs based on all current engineer's assessments and phase in the required amount for replacement value starting in 10 years to give the member municipalities an opportunity to prepare for increases to the budget.***
- 4. Adopt correct amount and implement it immediately to spread the capital replacement expenses over the longest timeframe possible.***

The funds collected annually for placement into reserves will generate additional revenue (through interest collected on reserves to help offset the overall expenditures of repairs, maintenance and replacement costs. Although this is an unpredictable source of revenue, it has been identified in this plan and is only an estimate based on historical averages of interest rates.

Municipal funding support for this plan would be apportioned in accordance with current value assessment information provided by the provincial government.

Based on future funding available to the CVCA through its member municipalities and the WECl program, the funding strategy may have to be reviewed and updated biennially rather than on a municipally based cycle of four years or longer.

Operational (Supporting) Assets

The CVCA Board of Directors have recognized since 2018 the necessity to establish a reserve to allow the replacement of operational assets in order to undertake the duties of the programs and services which have been mandated for the Authority. This approach affirms the CVCA's fiscal responsibility and commitment to purchase, use and maintain every asset the CVCA staff require to conduct business. Both sections of the plan will enable CVCA management to use plan for budget preparation. In addition, this part of the plan will provide the financial resources for procuring the necessary tools to ensure day to day operations of staff will be completed in an efficient and effective manner which in turn will assist with capacity. The plan will also aid staff with maintenance, which will preserve the asset as long as feasible without it becoming a safety concern.

Moving forward, the CVCA will review its reserves on a regular yearly basis in tandem with the presentation of the financial statements to ensure funds have been correctly assigned to the suitable reserve fund and the reserve fund eventually reaches the appropriate threshold. This plan will recognize there will be a certain degree of fluidity as assets are purchased and retired from use. Therefore, in any given year, since the reserve has not reached the maximum threshold, the CVCA may be "borrowing" from the reserve to pay for an asset when there hasn't been sufficient amortization allocation to date. This situation should self correct over time as funds are accumulated and placed into the reserve.

The assets have been identified in conjunction with input from senior staff. Most of the main assets have been identified. However, there are assets that have a lower value per unit but have a significant value when grouped together. For example, staff have identified a group for office equipment, furniture and fixtures or shop equipment. This list of assets will be reviewed yearly, as there will undoubtedly be changes moving forward.

Staff have amortized the value of assets based on the life expectancy of the asset. (Senior staff have contributed extensively especially with older assets that have not been replaced to date with an estimated life expectancy.) This will be reviewed on an annual basis and reflect the usage pattern of the asset which will consume the asset's serviceable life.

Once the amortization value has been determined, staff have calculated the approximate amount required to contribute to the reserves. The asset chart has been included in this plan.

The CVCA recognizes the asset plan will need to be reviewed yearly to 1) keep the plan current to help guide budgetary decisions, 2) ensure the appropriate tools are provided for staff to undertake their duties and responsibilities as directed by CVCA management 3) to ensure new asset additions are recorded, 4) to remove expired assets from the list in order to achieve the correct contribution to reserves, 5) to remove the uncertainty for our member municipalities the total value of our assets to aid in their budget deliberations and 6) meet the current requirements as outlined in Ont. Regulation 686/21.

Appendix A: Dam Repair Estimates

Marmora Dam					
Classification: High¹					
Dam Repair Estimates² as of 31 December 2024					
<i>Item</i>	<i>Identified Expenses³</i>	<i>Notes</i>	<i>Completed Project Expenses</i>	<i>Pending Repairs Expenses</i>	<i>Priority Weighting⁴</i>
Dam Safety Assessment	15,000		15,000		5
Electrical	1,400	Inspection	0	1,400	2
Gantry	49,000	Completed	49,000		
Misc. Metal Repairs (gains, drain port covers)	17,000	Partial Completion	2,000	15,000	1
Signage	8,900	Completed	8,900		
Dam Safety Booms	60,000	Completed	60,000		
Stop Logs	30,000	Ongoing	0	3,000	
Misc. Concrete Repairs	135,000	Incomplete	0	135,000	3/4
Misc. Repairs (West Embankment)	20,000	Incomplete	0	20,000	5
West Sluiceway Gain and Deck Repairs	128,500	Completed	128,500		
West Sluiceway Gain Covers	0		0		2
East Dam Gain Covers	1,200	Completed	1,200		
Electric Gate (Rod)	7,300	Completed	7,300		
Electric Gate Repairs	11,000	Completed	11,000		
Electric Gate (Wiring)	0		0		
Gate and Fencing	19,200	2025 Install	19,200		
Handrails	3,000	Completed	3,000		
Minor Leakage at West End of Dam	0	To be assessed	0		
Engineering(Drawings, Tenders, Support)	30,000	Partial Completion	25,000	5,000	
Dam Safety Booms Installation	60,000	Completed	60,000		
Dam Safety Boom Maintenance	1,800	Ongoing	0	1,880	1
Totals	598,300		390,100	181,280	

¹ The dam classification was determined to be “High” with an associated Inflow Design Flood (IDF) of the Probable Maximum Flood (PMF Storm). Based on the hydro technical assessments, the dam cannot safely discharge the IDF without runoff overtopping the sluiceways. As such, the dam does not meet the requirements on the 1999 draft Ontario Dam Safety Guidelines (ODSG) with respect to freeboard.

² From 2008 Dam Safety Assessment

³ Based on original estimates plus average 2% annual inflation

⁴ Ranking used to Assist with Priority - 1 is high, 5 is low

Belmont Dam					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
<i>Item</i>	<i>Identified Expenses</i>	<i>Notes</i>	<i>Completed Project Expenses</i>	<i>Pending Repairs/Expenses</i>	<i>Priority Weighting</i>
Dam Safety Assessment				15,000	1
Apron	145,000	Incomplete		145,000	4
Deck	265,000	Incomplete		265,000	4
Pier Nose Extension	357,000	Incomplete		357,000	4
Rock Bolts	66,000	Complete		0	n/a
Concrete Repairs	n/a	Incomplete		n/a	
Handrails	38,300	Complete		0	n/a
Gantry/Fall Arrest	45,000	Complete		0	n/a
Stop Logs	29,000	Ongoing		2,000	1
Gain Covers	19,000	Incomplete		19,000	1
Signage	4,000	Complete		0	n/a
Walkway	21,000	Complete		0	n/a
Gain Refurbishment	29,000	Incomplete		29,000	3
Service Gains & Pedestals	21,000	Incomplete		21,000	3
Engineering (Drawings, Tenders, Support, Construction Admin Site Monitoring)	220,000	Partial		110,000	4
Dam Safety Booms Installation	38,000	Complete	38,000	0	n/a
Dam Safety Booms Maintenance	1,800/unit	Unpredictable		1,800	1
Totals	1,299,100			964,800	

Wollaston Dam					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
<i>Item</i>	<i>Identified Expenses</i>	<i>Notes</i>	<i>Completed Project Expenses</i>	<i>Pending Repairs/Expenses</i>	<i>Priority Weighting</i>
Dam Safety Assessment				10,000	1
Mobilization and Demobilization	66,600			66,600	4
Dewatering	103,000			103,000	4
Sediment & Erosion Control	14,000			14,000	3
Haul Road	8,500			8,500	4
Apron	42,000			42,000	4
Deck	43,000			43,000	4
Pier Nose Extension	84,000			84,000	4
Buttresses	18,200			18,200	3
Steps	4,100	done	4,100	0	
Concrete Repairs	29,400			29,400	1
Rock Bolts	24,700			24,700	2
Handrails	17,000			17,000	1
Gantry	27,400	Partial Completion		0	1
Stop Logs	8,200	Ongoing		1,000	1
Gain Covers	5,500	Wilts done	5,500	0	
Signage	4,100	Done	4,100	0	
Gain Refurbishment	8,300			8,300	3
Engineering	75,500			75,000	4
Restoration	8,200			8,200	4
Dam Safety Booms	15,200	Completed	15,200	0	
Totals	606,900		28,900	552,900	

Oak Lake Dam					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
Item	Identified Expenses	Notes	Completed Project Expenses	Pending Repairs/Expenses	Priority Weighting
Dam Safety Assessment	5,000			5,000	2
Signage	1,000			1,000	1
Totals	6,000			6,000	

Allan's Mill Dam					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
Item	Identified Expenses	Notes	Completed Project Expenses	Pending Repairs/Expenses	Priority Weighting
Dam Safety Assessment	10,000			10,000	2
Signage	1,000		1,000		
Safety Booms	???				
Safety Boom Repairs	1,800			1,800	
Concrete Repairs	???				
Totals			1,000	11,800	

Steenburg Dam					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
Item	Identified Expenses	Notes	Completed Project Expenses	Pending Repairs/Expenses	Priority Weighting
Stop Logs	100				3
Dredging	???				3
Totals					

Crowe Bridge Weir					
Classification: Low					
Dam Repair Estimates as of 31 December 2024					
Item	Identified Expenses	Notes	Completed Project Expenses	Pending Repairs/Expenses	Priority Weighting
Dam Safety Assessment				5,000	5
Minor Concrete Crack Repairs	39,000	Dewatering likely required		39,000	4
Major Concrete Repairs (Cracks, spalling)	110,000	Dewatering likely required		110,000	3
Totals	149,000			154,000	