

Crowe Valley Conservation Authority
Water Monitoring System Upgrade Report
Agenda Item 13 – 16 Sept 2021 Board Meeting

Overview

The Crowe Valley Conservation Authority (CVCA) is looking to upgrade its water monitoring system in order to provide the citizens that reside within the Crowe Valley Watershed with the best possible water resource management and flood forecasting.

The current system is still functioning and performing as anticipated when it was installed approximately 33 years ago. However, the software is vastly outdated and equipment (computers, modems, etc.) that are compatible with the software is no longer available. The CVCA is relying solely on the spares currently in the office. In addition, the system is limited in its functionality and accessibility (especially for weekend monitoring).

As the Board has already approved the expenditure of reserves to cover the transition of three of the sites, this report provides further details that were not available at the 17 June 2021 meeting.

Upgrading the system will require purchasing new data logging equipment for all 8 monitored lakes, as well as the construction of 2 new gauge houses on Crowe Lake and Chandos Lake. Constructing new gauge houses will require the construction of a new gauge house building, having the building hooked up to electricity, and the construction of a stilling well, as well as the purchase of new data logging equipment. We will also need to receive permission from the municipalities of Marmora & Lake and North Kawartha to construct the gauge houses on municipal land.

New Gauge Houses

A new gauge house is required on Crowe Lake because there is currently no gauge house on the lake meaning that staff have to take manual readings of the lake level. Constructing a new gauge house would eliminate this issue. The CVCA has determined that the best location for this new gauge house is on the shoreline at Booster Park in Marmora, approximately 20 metres east of Booster Park Beach. This location has been chosen due to its proximity to an electrical power line, its location on the lake, and the ability to easily access the location. The CVCA has received permission from the municipality of Marmora & Lake to use this location.

A new gauge house should be considered on Chandos Lake since the reliability of the data collected has come into question. Accuracy of the water level readings from the existing gauge house is a concern as it is located on a creek connecting to Chandos lake and not on the lake itself. The creek that the gauge house is located on is known as Flat creek or Deer river. The location of the gauge house has led to some false readings, especially when the creek is flowing at a high rate. As a result of these false readings, CVCA staff occasionally have to go to the gauge house to take a manual water level reading

and reset the data logging system. Constructing a new gauge house would eliminate this issue. The CVCA has determined that the best location for the new gauge house would be on Chandos Public Beach, at the far western end of the beach along the shoreline just past where it turns from sand to grass. This location has been chosen due to its proximity to an electrical power line, its location on the lake, and the ability to easily access the location for construction and future maintenance. However, permission would have to be given by the municipality of North Kawartha for this location to be used.

New Data Logging Equipment

Equipment	Cost
GOES Satellite Transmitter	\$2,451.00
GOES Antenna	\$688.00
Radar Sensor	\$3,725.00
Mount	\$85.00
Cables	\$94.76
Encasing	\$189.80
Total	\$7,233.56

The purchasing of new data logging equipment will cost \$7,233.56 per site.

Datasphere Data Management Software

Datasphere is a data management software by Kisters that will aid in flood forecasting by allowing data to be easily compared and graphed. It will also allow water levels to be checked quickly and easily from any location using the internet. The annual subscription to the service will cost \$1,500 for the entire system.

Construction of New Gauge House Building

Investigations into the cost of the construction of a new gauge house building have found that it will cost approximately \$5,000. The completion of outstanding quotes is required to determine the exact cost.

Construction of Stilling Well

Investigations into the cost of the construction of a stilling well and pipe leading out to the lake have found that it will cost approximately \$5,000. The completion of outstanding quotes is required to determine the exact cost.

Hooking Gauge House up to Electricity

Having the new gauge house hooked up to electricity will cost approximately \$5,182.76 for the Crowe Lake gauge house and \$4,766.56 for the Chandos Lake gauge house.

Total Cost of Constructing New Gauge Houses

The total cost of constructing a new gauge house will be approximately \$15,182.76 for the Crowe Lake site and 14,766.56 for the Chandos Lake site, plus the cost of purchasing new data logging equipment.

Description	Quantity	Cost
Purchasing new data logging equipment	8	\$57,868.48
Datasphere annual subscription	1	\$1,500.00
Constructing new gauge house buildings	2	\$10,000.00
Constructing distilling wells	2	\$10,000.00
Installing hydro at Crowe Lake gauge house	1	\$5,182.76
Installing hydro at Chandos Lake gauge house	1	\$4,766.56
Total	-	\$89,317.80

Conclusion

The total cost of upgrading the Crowe Valley Conservation Authority water monitoring system is approximately \$89,317.80.