

REPORT FOR INFORMATION**Cost Related to Stormwater Management Pond in Charleton Heights****Report Purpose**

To provide Priorities Committee with information on the cost and available funding sources to replace the fountain and reinstate the dye treatment for the stormwater management pond in Charleton Heights.

Our Strategic Goals

Goal 3 - Responsible Development

Goal 4 - Municipal Excellence

Goal 3 Priority - Investment in our infrastructure that supports development and complete communities

Goal 4 Priority - Optimal use of resources that meets the community's needs

Report

Council passed a motion requesting information on the cost and available funding sources to replace the fountain and reinstate the dye treatment for the stormwater management facility (SWMF) located in Charleton Heights. That facility is known as the Clover Bar Ranch SWMF.

Fountains

Strathcona County's Best Management Practice (BMP) for SWMFs states that fountains are external structures installed in wet ponds. They provide minimal aeration and circulation in wet ponds and as such do not improve water quality within these facilities – they are aesthetic in nature.

The BMP goes on to note that fountains may in fact have adverse effects on water quality as they may encourage algae growth and the re-suspension of nutrients which can add to algae issues and weed growth in a stormwater facility. For these reasons, the County has not approved any fountains being incorporated into new developments.

There are four fountains at three locations that Utilities has historically operated and maintained:

1. Village on the Lake – one fountain (under repair)
2. Clover Bar Ranch – two fountains (one in operation, one currently out of service in need of replacement)
3. Broadmoor Lake – one fountain (currently being assessed for repairs)

In addition to the fountains listed above, the County also operates and maintains a pumping system at Ball Lake, as well as two solar-powered mixers that are also annually deployed at Clover Bar Ranch.

There is a labour component to having fountains which includes the installation (generally occurring prior to the May long weekend), troubleshooting responses during the season, and fall removal.

Priorities Committee Meeting_Jul09_2024

Installation and removal for the two fountains at Clover Bar Ranch generally takes four to six hours, with three operations staff and one electrician operator. Troubleshooting generally is required at least twice per fountain per season.

Annual costs for fountain operation at Clover Bar Ranch

The estimated annual operating cost for the two fountains at Clover Bar Ranch is ~\$8,000 per year, or ~\$4,000 per fountain. This estimate is based on the following:

- Labour = ~ \$3,180 based on the following
 - Install and removal
 - three operators @ \$30/hr x 8 hours on average = \$720 x 2 = \$1,440
 - one electrician @ \$50/hr x 1hr on average = \$50 x 2 = \$100
 - Troubleshooting (occurs at least twice per year per fountain)
 - three operators @ \$30/hr x 4 hours on average = \$360 x 4 = \$1,440
 - one electrician @ \$50/hr x 1hr on average = \$50 x 4 = \$200
- Estimated power costs = \$600 per season (@12 hr per day for four months for two fountains)
- Amortized costs of fountain equipment is dependent on the actual cost of the fountain at time of purchase and the useful life, which is usually seven to 10 years, we have assumed \$4,000 per year (\$2,000 per fountain).

Fountain replacement

Replacement of the currently out-of-service fountain at Clover Bar Ranch today, as per a recent quote, is approximately \$20,800. Utilities 2024 budget did not include budget for replacement of this fountain.

Dye program history

Algae requires sunlight to grow. There are aquatic colorant products available in the United States (e.g., Aquashade) that claim to reduce subsurface algae and weed growth by filtering out/blocking specific wavelengths of sunlight that are necessary for photosynthesis. These products are considered herbicides/algicides.

The County began using Aquashade in SWMF pilot applications in 2004. At the time, Aquashade was registered with Environment and Climate Change Canada (ECCC) and available for use in Canada, but that registration was cancelled at the end of 2004 – it can no longer be legally obtained in Canada. Despite referring to the dye as Aquashade for years, the County would have switched to a different vegetable-based dye product (such as Wavex or True Blue) once stock of Aquashade ran out from local suppliers, likely in the mid to late 2000's. Whereas Aquashade is considered an herbicide/algicide, the dye products available in Canada are not, and are only utilized for aesthetic purposes; the County has been using these aesthetic dyes for many years to be consistent with a historically provided service.

The colour provided by these aesthetic dyes in SWMFs is temporary due to the constant flow of water through the facilities due to sump pump discharges and rainfall events, which ultimately wash the dye out of the facilities. Dye application in SWMFs, had more-or-less been phased out prior to 2021; the only dye applications that year were at Ball Lake, as an experiment to see if dye application provided any vegetative control and if that would help mitigate odours generated at the SWMF during spring turnover – no improvement was observed.

Priorities Committee Meeting_Jul09_2024

The County did complete one dye application in 2022 at Clover Bar Ranch, after residents near that SWMF expressed concern that the County had discontinued the dye program without sufficient evidence that it was not effective.

In an effort to determine conclusively if there was any benefit to aesthetic dye applications from an algae and vegetation control standpoint, the County conducted an experiment at two SWMFs in Sherwood Park throughout the summer last year. Utilities applied a vegetable-based dye to the Village on the Lake and Clover Bar Ranch SWMFs four times over the course of the summer; the County's Environmental Planning team took samples over the course of the summer at those facilities, plus two additional facilities to act as controls (12 sets of samples from the four SWMFs)

The level of chlorophyll-a in the water (a reliable indicator of algae growth) was not measurably affected in any way by the application of the colorant, indicating that dyes available in Canada did not control algae or vegetation.

The program report (Enclosure 1) recommended that the County discontinue aquatic colorants within the stormwater management network. As such, Utilities is no longer using True Blue or any similar products in SWMFs. This report is publicly available through our website at <https://www.strathcona.ca/agriculture-environment/conservation/wetlands/algae-and-weed-management/>.

Copies of letters provided to residents of Clover Bar Ranch explaining the 2023 experiment and the findings are included as Enclosures 2 and 3. Residents were informed that the County would no longer apply dye to SWMFs in the findings letter.

An education-oriented 'Pond Party' was also held at the Clover Bar Ranch SWMF earlier this month and was well attended (~50 people). There were no questions posed to County staff during the event related to the discontinuation of the dye program.

Annual costs for dye application at Clover Bar Ranch

Costs related to dye applications at Clover Bar Ranch SWMF are:

- two applications annually
- cost of dye = \$1,600
- three operators @ \$30/hr x 3hr x 2 applications annually = \$540
- total annual cost for dye application at Clover Bar Ranch = \$2,140

Historically, dye applications have occurred at SWMFs throughout Sherwood Park (though not consistently at all of them). Locations and frequency of past SWMF dye applications, with the current dye costs are presented below:

1. Ball Lake: two applications annually for a total of 180 liters ~ \$4,500
2. Upper Nottingham: two applications annually for a total of 64 liters ~ \$1,600
3. Broadmoor Lake Park: two applications annually for a total of 134 liters ~ \$3,400
4. Village on the Lake: two applications annually for a total of 64 liters ~ \$1,600
5. Woodbridge Farms: two applications annually for a total of 42 liters ~ \$1,100
6. Eastgate: two applications annually for a total of 21 liters ~ \$500
7. Clover Bar Ranch: two applications annually for a total of 64 liters ~ \$1,600
8. Fountain Creek: two applications annually for a total of 26 liters ~ \$700

Priorities Committee Meeting_Jul09_2024

An overall stormwater dye application program consistent with the locations and frequencies listed above would be approximately \$20,000 per year.

Discussion

There are several other SWMFs existing today where members of the public could request fountains and/or dye as part of neighborhood enhancement (e.g., Salisbury Village, Heritage Wetlands, Clarkdale Meadows, Lakeland Ridge, Centennial Wetlands, Aspen Trails, etc.).

Strathcona County has over 80 SWMFs active and in operation within the urban service areas of the municipality.

Even a limited broader program implementation would have significant cost implications. The capital cost for 10 additional fountains (new fountain and cost to bring power to an appropriate location for connection and disconnection) is estimated to be \$400,000 (but could be more depending on where power would be coming from) and may expedite construction of access improvements at each new site. Annual operating costs for dye and fountains at 10 new sites would likely be around \$70,000 per year and could not be achieved with current staff resources without impacting other programs.

Resident behaviours directly influence algae in neighbourhood SWMFs. Education activities for residents (such as Pond Parties) can encourage behaviour changes by speaking to the benefits of using slow-release fertilizers like compost, washing vehicles at the carwash instead of on driveways, and picking up dog waste; these behavioral changes can help reduce the amount of nutrients and algae. Naturalizing the vegetated areas / buffers around SWMFs also helps prevent algae by absorbing excess nutrients and providing shade to keep water cool and oxygenated.

Funding sources

Costs for fountain replacement, operation, and maintenance, as well as dye applications have traditionally been funded through utility budgets. Utilities is unaware of other funding sources for these activities.

Council and Committee History

June 11 ,2024 THAT administration provide a report to Council by July 16, 2024 that outlines the cost and available funding sources to replace the fountain and reinstate the dye treatment for the storm water management pond in Charleton Heights.

Other Impacts

Policy: n/a

Financial/Budget: As per above

Legislative/Legal: n/a

Interdepartmental: Planning and Development Services

Master Plan/Framework: n/a

Enclosures

- 1 Aquatic Colourant Pilot Program Report
- 2 April 2023 Letter to Residents
- 3 May 2024 Letter to Residents