Trouble in Paradise

by Fred Peters and Jon Van Loon

It's not pretty, a waterway choked in green slime. Standing on the north bridge in Swan Lake, a couple of local teens asked themselves, "Why was it allowed to get this bad?"

Like many of life's problems at this late point there is no simple answer. It's the age-old story of neglect due to humankind's propensity for reactive rather than proactive thinking. In the article below we hope we can lead you through this dilemma and provide hope of a solution. Then we invite you to join our group and participate in defining, creating and preserving the best future possible for Swan Lake and surrounding environment.

With the end of construction at Amica and the adjacent townhouses, we now have a completed pathway around Swan Lake. The addition of the new park areas along Williamson St. and the addition of the skate park and tennis court to the west of Williamson make the combined Swan Lake Park and Mount Joy Park a community centre piece for Markham.

For many, the jewel in the crown is Swan Lake.

Unfortunately, Swan Lake is struggling. The water quality is poor and, if not addressed, the water will become a health hazard. Fortunately the City of Markham recognizes the issue and is investigating its options for treating the primary problem of too much phosphorus in the water. Too much phosphorus spurs the growth of floating pads of algae and phytoplankton that produces murky green water. Like most things in life, algae are good in moderation. Algae are a primary food source for many forms of aquatic life and waterfowl including our beloved swans, but in excess it can harm aquatic life, be unsightly and become musty smelling. One of the more serious forms, blue-green algae (cyanobacteria) has been seen in most years in Swan Lake. This past summer there were several Canadian news reports on dogs that died or were paralyzed after swimming in waters containing cyanobacteria.

Tests over several years by the city and its consultants have concluded that phosphorus levels are consistently in the highest level (hypereutrophic) range, and the environmental and health risk ramifications of this strongly dictate that action is required. This fall and winter the city, in concert with a consultant already hired, plans to review its options, and determine a remediation plan to be sent to council for approval, hopefully to be initiated in the summer of 2021.

Many Swan Lake Village residents will know that this is not the first time the lake water condition has reached this point. Almost 10 years ago, Jon was persistent in getting the city's attention and ultimately spurring them to address the water quality problems facing the lake at that time.

This summer, the city has been very open in providing us with current information on Swan Lake water quality parameters, together with briefing us on their general plans. Thus, we hope to be able to read and then provide our views on the city/consultant's report, expected this fall.

Containment and Restoration

One core question is whether our focus should just be about the current water quality and the possible health risks. Addressing water quality issues is extremely important and we applaud the city's plan to have the issue remediated as soon as possible. But we would like to see the discussion to be more than about only "containment" of the current problems.

We have reviewed a few of the original environmental and consultant reports that were written in the early 1990s, primarily in support of the development of Swan Lake Village. One report by Cosburn Patterson Wardman Limited, dated October 1994, states that "the area will be transformed from an inactive gravel pit into diverse natural habitats for aquatic and terrestrial wildlife, with passive recreational uses." At that point it notes that the pond had already been stocked with largemouth bass and is fished by local anglers, and that the "former gravel pit provides quite good to excellent habitat for largemouth bass." With the exception of the water quality and robust aquatic life, much of the original vision has materialized.

Markham already acknowledges Swan Lake Park's important environmental role within the city. In this regard we would like to encourage discussion on the goal of "restoration" by bringing back the water and the surrounding area as close as possible to the vision agreed to by all 25 years ago. Virtually everything you see in Swan Lake Park is man-made. The lake started as a gravel pit. There was some illegal dumping which has added to some of the current challenges. A particularly difficult problem is there is no stream inflow and outflow to provide a fresh water supply; thus, in this respect, rain and evaporation provide by far the greatest dynamic in Swan Lake.

As a wildlife sanctuary it has worked perhaps too well. The lake attracts large flocks of migrating Canada geese, whose droppings are viewed as the primary source of phosphorus impacting the lake. We are challenged by an annual cycle of nature: the excess phosphorus from the geese spurs an excess of algae which leads to toxins in the water. When algae die and decompose oxygen is consumed from the water and that puts the fish at risk. Low oxygen levels have resulted in at least three major fish kills over the past few years, visible when the ice melts in spring. The current water quality is so poor that only the hardiest of fish can survive.

Is periodic treatment the best long term solution?

Sustainability

In 2013 the city decided it would treat the Lake with Phoslock—a clay based product that helps trap the existing phosphorus at the bottom of the lake. It worked for a few years, but when the phosphorus trapping sites within the Phoslock clay layers became full, the phosphorus from new goose droppings built up and the same poor water quality returned. Consequently, the city has engaged consultants to advise on alternatives for another remediation treatment. No doubt another treatment of some sort is essential immediately, but realistically any such plan must include potential for long term sustainability.

We see the annual migration of the geese as much a part of Canada as moose and beaver, something to be preserved. We need to find ways to manage their seasonal visits in a sustainable way. Fish eat algae and therefore could be a contributor to a long term solution. Certain plants add oxygen to the water and that will help sustain the fish.

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At present only very hardy varieties of fish can exist due to low oxygen content of the water. One of the original visions for Swan Lake was to maintain a healthy environment for sport fishing. Supporting sustainable fish environments is one of the current objectives for the Toronto and Regional Conservation Authority's plan for the Rouge Valley watershed, wherein we reside.

Currently fishing is permitted in the lake but all of the game fish that were added to the lake have died off, probably due to a lack of oxygen. It is not safe to eat any fish taken from the Lake. To restore fishing would require a significant improvement in the quality of the water and improved access to the lake for the fishers. But once restored, it would add an important recreational dimension to the park.

Enhanced Community Role

Perhaps we should initiate an invigorating discussion relating to the role of Swan Lake Park as a recreational jewel for Markham, something approaching the level of Toogood Pond in Unionville or Mill Pond in Richmond Hill. But in doing so we must bear in mind, in the case of Swan Lake, the lack of fresh stream water inflow and outflow will provide an ongoing relatively unique challenge to the water component therein. These parks have an important role as local sanctuaries within their communities, and are also the centre of many cultural activities within the city. Mill Pond hosts an annual Artists in the Park in the summer and a winter carnival. Toogood Pond has been the venue for many community events such as the Unionville Festival's Crazy Craft Race and Rubber Duck Races. Swan Lake Park and the adjacent Mount Joy Park are underutilized as community venues. We should be discussing how we can better use these wonderful facilities.

The Friends of Swan Lake Park

With the support of as many fellow residents as are interested, we are initiating a new group, tentatively called "The Friends of Swan Lake Park." For now, our core group is focused on discussing the outcome of the water quality plan that will be recommended to council by the city staff and their consultant. Our ongoing intention is to create a forum for discussion of the issues outlined above, and when appropriate express the results of our discussions to the city for consideration. Many of these issues impact the broader community of Greensborough and Mount Joy, so that, as we refine our views, we will need to find a way to engage with the communities outside the gates of Swan Lake Village.

We look forward to ideas and contributions from others. □

Algae Invades the Feeding Station

Photo Courtesy of Jon Van Loon

Markham's Vision for Swan Lake Park

Photo Courtesy of Fred Peters

About the Authors

Fred has initiated the creation of the new environmental group, The Friends of Swan Lake Park.

Jon, retired Professor Emeritus of Chemistry, Environmental Sciences and Geology at the University of Toronto, has world-wide experience on water quality related issues.