SUBJECT: Sole Source Procurement – Gypsy Moth Control Program

TO: Select a recipient

FROM: Roads, Parks and Forestry Department

Report Number: RPF-02-19

Wards Affected: Ward 1 and Ward 3

File Numbers: 820-03

Date to Committee: March 25, 2019

Date to Council: March 25, 2019

Recommendation:

That Council approve the sole source procurement for the aerial application of the biological pesticide *Bacillus thuringiensis* 'Kurstaki' ("Btk") in spring 2019. The services, provided by Zimmer Air Services, 9742 Blenheim Road, Blenheim, Ontario N0P 1A0 are quoted at a purchase price of $985.00 per hectare (Ha). Total contract value is estimated at $120,000.00.

Purpose:

In order to comply with Procurement By-law 19-2014, Section 14.8, Council approval is required for purchases with a value of $100,000 or more. The purpose of this report is to seek approval to proceed with a sole source purchase agreement for the aerial application of the biological pesticide *Bacillus thuringiensis* 'Kurstaki' ("Btk") in the areas identified in Appendix A to report XXX for the control of Gypsy Moth.

The nature of the work is very specialized with stringent requirements in place by Transport Canada and the Ministry of the Environment, Conservation & Parks. As a result, Zimmer Air is the only known qualified firm to be able to undertake this work.

A Healthy and Greener City

- Environmental and Energy Leadership

An Engaging City

- Good Governance

Background and Discussion:

Transport Canada Aviation Regulations require a twin-engine helicopter be used for the low-altitude flight work needed to spray pesticide over urban/suburban areas. In addition to the unique qualifications required for the operation of the low-flying twin engine helicopter, there is complexity to the aerial application. Canadian Aviation Regulations requires the air operator to submit an application for Aerial Work with a detailed work plan. This application must be submitted to Transport Canada officials at least 21 days prior to initiating the operation. Upon approval, the air operator is granted Ministerial Authorization through a Special Flight Operations Certificate for Aerial Work. The pesticide must be applied between mid-May to early-June. This specialty in terms of equipment and expertise limits the applicators that are able to complete this work

Strategy/process

History

In 2008, the City of Burlington implemented an aerial spray program to treat five parks and one golf course for Gypsy Moth. In the six Burlington blocks, a total of 89.4 ha were treated with two applications of Foray 48B with an active ingredient: *Bacillus thuringiensis* var. kurstaki (Btk). At that time Zimmer Air Services was hired to conduct the aerial application of Btk. Follow up analysis indicated that the program was effective at achieving program goals.

Gypsy Moth (*Lymantria dispar dispar)* is a non-native invasive species that was introduced to North America around 1869. It is a tree defoliator; most damaging in its larval (caterpillar) stage, a full-grown caterpillar can ingest up to .10m^2 of foliage per day. Gypsy moth was first discovered in Ontario on Wolfe Island around 1969. Since that time, Gypsy Moth has continued to have a cyclical impact with high population occurring approximately every 10 years.

Integrated Pest Management Approach

Using an integrated pest management approach (IPM), staff have focused on monitoring pest populations over time and determining whether populations are growing or declining; concentrating or dispersing. Further, action thresholds are established which identify the number of pests before requiring some mitigating action. In the case of gypsy moth, the action threshold is identified as 2,500 egg masses per hectare.

When Gypsy Moth populations reach or exceed this point, it is anticipated that notable defoliation will occur, which results in increased stress to urban trees. When cycles of defoliation occur several years in a row, nutrient stores are depleted to dangerous levels and trees will start to decline, and in some cases die.

Pesticide Use - Btk

The purpose of an integrated pest management program is to implement a control to reduce pest populations to a tolerable level, rather than eradicating them altogether. For Gypsy Moth, the most economical way to control expansive populations of Gypsy Moth is via aerial application of *Bacillus thuringiensis* 'Kurstaki' (Btk).

Btk is a bacterium that is found naturally in the soil. Btk is applied to the leaves of trees while caterpillars are in the early instar (immature) stage of development. Once ingested, the bacteria disrupt the digestive system of the caterpillars within 24-48 hours, leading to mortality shortly thereafter. In order to be effective, Btk relies on an alkaline gut environment. As a result, Btk does not impact birds, bees, people, or pets.

Btk has low residual qualities in the natural environment, persisting for a short period of time of 1 to 4 days after application, as sunlight and fungi deteriorate it, and rain washes it away. Due to the narrow window of application due to insect development stages, coupled with low-residual qualities of the product, Btk has very low impacts to other species of butterflies and moths.

Annual Monitoring

City staff have been monitoring the cyclical increase in Gypsy Moth populations since 2017. In 2018, in addition to an egg mass survey program, staff engaged a contractor to ground spray significant trees at Mountainside Park with moderate success.

In January of 2019, Forestry staff completed egg mass surveys in various pre-determined locations throughout the City. During that time, approximately 121 hectares were identified as exceeding an action threshold of 2,500 egg masses per hectare. Treatment areas are shown on Appendix A.

Table 1 below, identifies the treatment locations in relation to ward and size of area to be treated:

Table 1: Recommended Treatment Areas

Proposed Treatment Block	Approximate Egg Masses per Hectare	Defoliation Forecast	Area (hectares)	Affected Wards

Lowville Park	5,894	Severe	21.9	3
Mountainside Park	9,379	Severe	10.5	3
Forestvale Park & Kerncliff Park	10,727	Severe	66.3	1
LaSalle Park	2,157	Moderate	22.3	1
Total:			121 Ha	

Determining Application Date:

The final date selection for spraying requires significant analysis of both larval development of the insect and the stage of leaf growth of the trees.

Options considered

Staff considered continuation of the monitoring of Gypsy Moth population over the next year, with no control options implemented. This option is not recommended as the monitoring data indicates that the population is growing, by comparing new and old egg masses, as well as relative egg mass size. Gypsy moth populations are known to be cyclical, approximately every 10 years. As a result, it is estimated that the City is in year 2 or 3 of the cycle, suggesting that the population is in a growth phase. Without implementing a control program, it is anticipated that the insect population will continue to grow, trees will undergo a subsequent season of defoliation and there is a higher likelihood to partial or whole tree mortality.

Financial Matters:

Funding

Committee of the Whole recommended a one-time funding of $120,000.00

Source of Funding

Funding

Committee of the Whole recommended a one-time funding of $120,000.00 to be funded from the Forestry Reserve Fund.

Other Resource Impacts

Not applicable

Public Engagement Matters:

Summarize any public notification or engagement initiatives.

Conclusion:

Urban Forestry in consultation with Procurement Services has concluded that Zimmer Air Services is the only vendor qualified to perform the highly specialized work of this type

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Respectfully submitted,

Steve Robinson
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Report Approval:

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.