EXHIBIT NO. 1

5
1-20-07

City of Alexandria, Virginia

MEMORANDUM

DATE: JANUARY 11, 2007

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

THROUGH: JAMES K. HARTMANN, CITY MANAGER

FROM: KIRK KINCANNON, DIRECTOR
DEPARTMENT OF RECREATION, PARKS AND CULTURAL ACTIVIVTES

SUBJECT: THE EFFECTS OF THE AERIAL APPLICATION OF BACILLUS THURINGIENSIS ON BIRDS

This memorandum is in response to the question raised during City Council's deliberation on the proposed gypsy moth suppression program for 2007 concerning the effects of the aerial application of the pesticide Bacillus thuringiensis (B.t.) on birds and bird populations in this area. While no studies on this issue have been conducted for this specific area, enough research has been completed to provide an informed answer to the question.

Indirect Effects: Much of the research read in developing this response suggests that birds may be indirectly affected by a reduction of available food resources when the larvae of non target butterflies and moths feeding at the same time as the gypsy moth in areas treated with B.t.[1] Studies in Oregon, New Hampshire, and Canada showed that chickadees and black-throated blue warblers brought fewer caterpillars to their nests in treated areas. The birds were apparently able to find alternative food sources because the nesting successes were not significantly affected.[2] The warblers also made fewer nesting attempts in treated areas.[3] One study also indicated that there were fewer spruce grouse chicks in B.t treated areas, and the chicks that did develop in treated areas grew more slowly.[4]

Studies on the mortality of non target lepidopteron species indicate that B.t. causes a significant reduction of both larval and adult stages. These populations, however, were reported to recover the following year. Some of the forest butterfly and moth species affected by B.t. applications to control gypsy moth are red spotted purples, swallowtails, underwings and other lepidopteron larva exposed at the time of the pesticide application.[5]

Direct Effects: A report summary of the Oregon Department of Fish and Wildlife in 1986 suggested that the hatching of ringneck pheasant eggs may be reduced by half when the eggs are treated with Dipel, a commercial form of B.t., when it is combined with at spreader sticker solution used to improve the effectiveness of the chemical. The results of the study could not determine whether it was the pesticide or the spreader sticker affecting the egg hatch.[6]

Conclusion: The effects cited above suggest that birds that nest or forage within Alexandria's proposed 75 acre spray area during or immediately following the application of B.t. may be affected by a reduction in some species of lepidopteron larva available as food. Although their food resources may be reduced within the spray block temporarily, other food sources are available to the birds. Furthermore, although the efficacy of B.t. varies with weather and light conditions, most of the chemical is rendered ineffective within four days of the application, following which feeding larva will no longer be affected.[7]

There is no evidence that any birds in this area are directly affected by the aerial application of the B.t. to control gypsy moths.

In considering whether or not these factors that affect birds warrant opposing the proposed gypsy moth suppression program, it should also be considered that while we are proposing to spray 75 acres this year, left untreated there is a chance we will be proposing to spray significantly more acreage in coming years, affecting an even larger area of bird habitat. In addition, the research provides little evidence that the bird populations of Alexandria would be permanently affected by spraying. There is a real possibility, however, that repeated tree defoliation by a gypsy moths combined with other environmental stresses such as drought could lead to a significant loss of trees, tree canopy, habitat for birds and other wildlife, and the loss of many other documented environmental, psychological, and aesthetic benefits that trees provide in the City.

cc. John Noelle, City Arborist
Jerry Dieruf, Arborist/Gypsy Moth Coordinator

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[1] Swadener, Carrie. 1994 Bacillus thruingiensis (B.t.) Journal of Pesticide Reform Vol 14, No 3, Fall.
[2] Gladdis, P.K. and C.C. Corkran. 1986 Secondary effects of BT spray on avian predators: the reproductive success of chestnut-backed chickadees. Portland, OR: Northewest Ecological Research Institute.
[3] Rodenhouse, N.L. and R.T. Holmes. 1992 Results of experimental and natural food reduction for breedint black-throated blue warblers. Ecology 73(1); 357-372.
[4] Bendell, J.F., R.D. James, and B.L. Cadogan. 1990. Effect of B.t. 30 var. kurstaki on insects, small birds and mammals, amphibian and chicks of spruce grouse. Unpublished study. Toronto, Cananda: University of Toronto.
[5] Erickson, Laural 2006. History of gypsy moths. www.birderblog.com/post.php?id=1266 - 14k -
[6] Jones, I.W. 1986 Summary report: Effecto of Dipel (and Plyac) on hatchability of ringneck pheasant eggs. Oregon Dept. of Fish and Wildlife.
[7] Dunkle, R.L. and B.S. Shasha. 1989. Response of starch encapsulated Bacillus thuringiensis containing ultraviolet screens to sunlight. Environmental Entomology 18 (6): 1035-41 As cited EXTONET Extension Toxicology Network 1994 Bacillus Thiuringiensis. http://extoxnet.orst.edu/pips/bacillus.htm

EXHIBIT NO. 2

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1-20-07

16
12-12-06

City of Alexandria, Virginia

MEMORANDUM

DATE: DECEMBER 7, 2006

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

FROM: JAMES HARTMANN, CITY MANAGER

SUBJECT: PROPOSED GYPSY MOTH SUPPRESSION PROGRAM FOR SPRING 2007

ISSUE: City Council consideration of the Gypsy Moth Suppression Program for spring 2007.

RECOMMENDATION: That City Council:

(1) Schedule the proposed 2007 gypsy moth suppression program for public hearing and consideration on Saturday, January 20. (Staff will hold an open house prior to that date to provide the public an opportunity to gather information and ask staff questions about the program.) Staff will meet with the Northridge Civic Association about the proposal before the public hearing;

(2) After the public hearing approve the program as recommended by staff with the following components:

1. Aerial application of Bacillus thuringiensis (B.t.) over one spray block totaling 75 acres that includes 319 properties located in the Beverley Hills community bounded by South Overlook Drive on the north, Old Dominion Boulevard on the east, Allison Street on the south and Wellington Road on the west (Attachment 1) in cooperation with the Virginia Department of Agriculture and Consumer Services (VDACS);

2. Declaration that the aerial and ground spray programs are to be voluntary, that a 200-foot buffer zone will be maintained around the property of any resident or property owner objecting to the aerial application over their residence or property;

3. Notification off all residents and property owners within the proposed spray block and buffer area;

4. Voluntary ground spray of B.t. for susceptible tree species located on properties within the 200-foot buffer zone created by an objecting property owner;

5. Authorization for the City Manager to submit the State and federal funding applications and to enter into the required agreements for the Gypsy Moth Suppression program and file the required congested area flight plan and,

6. Implementation of other gypsy moth suppression measures to include the distribution of burlap for banding trees and educational materials in cooperation with VDACS.

BACKGROUND: Alexandria's gypsy moth suppression program began in 1988 with the spraying of 1,200 acres throughout the City, when hundreds of trees were sustaining serious damage from gypsy moth infestation. The suppression program was most intensive in 1989 when 1,800 acres were sprayed. Subsequently, spray areas varied from 400 acres in 1990 to 200 acres in 1991, to 100 acres in 1992, to 96 acres in 1993, to 57 acres in 1994 and to 44 acres in 1995. In 1998 two trees on the public right-of-way were treated by ground spray application of B.t. The steady reduction of the gypsy moth population during the past several years has been attributed to the development of beneficial fungal and viral diseases, as well as insect parasites that were able to suppress the growth of the gypsy moth population. The development and effectiveness of these naturally occurring controls is heavily dependent upon favorable environmental factors including temperature and rainfall during critical periods of the gypsy moths' development.

The egg mass survey conducted by the City in the fall of 2001 identified two potential spray blocks consisting of 46 acres in the Seminary Valley area and 50 acres surrounding the Virginia Theological Seminary. The program subsequently was cancelled due to flight restrictions imposed by the Federal Aviation Administration and Department of Homeland Security for security reasons following September 11, 2001. The Transportation Security Administration (TSA) still maintains a 5-mile "Flight Restriction Zone" around Ronald Reagan National Airport. As a result, Alexandria will require a waiver from the TSA for permission for the necessary aircraft to fly and apply spray within the restricted zone.

A resurgence of the gypsy moth population has occurred throughout Northern Virginia. Fairfax County proposes to spray approximately 4,220 acres, and Prince William County proposes to spray more than 5,000 acres in the spring of 2007.

DISCUSSION: The proposed suppression program is based on the results of an annual gypsy moth egg mass survey of approximately 100 City sites that have historically experienced significant gypsy moth infestations. The Department of Recreation, Parks and Cultural Activities completed the survey in November 2006. Results of this survey were used to determine the extent and severity of the City's gypsy moth infestation, as well as to develop options for treatment of areas which qualify for spraying under the VDACS program. The following are the options considered for the proposed program:

1. **No Pesticides**
   Application of no Bacillus thuringiensis or any other product and only the distribution of burlap banding and educational materials to the public;

2. **Voluntary Aerial Application of Bacillus thuringiensis – no ground spray**
   Aerial application of Bacillus thuringiensis (B.t.) in one spray block of 75 acres, combined with the distribution of burlap banding and educational materials to the public.

   B.t. is a naturally occurring bacterium that is registered by the Environmental Protection Agency (EPA) for use in the suppression of gypsy moth caterpillars in forested residential, commercial and industrial areas. According to EPA evaluations, people, pets, wildlife (terrestrial and aquatic) and beneficial insects are not harmed in any way by this insecticide.

   The qualifying area has significant gypsy moth infestation and consists of 75 acres that includes 319 properties bounded by South Overlook Drive on the north, Old Dominion Boulevard on the east, Allison Street on the south and Wellington Road on the west. This program would be voluntary, and a 200-foot buffer "no aerial spray area" would be established around any property where the owner and/or resident objects to the aerial spray application. **No ground spray applications of pesticides would be offered to treat those properties located within that 200 foot buffer area.**

3. **Voluntary Aerial or Ground Application of B.t.**
   Aerial application of B.t. in one spray block, combined with the distribution of burlap banding and educational materials to the public. This would be done in the same 75 acres that is described above. This program would be voluntary, and a 200-foot buffer "no aerial spray area" would be established around any property where the owner and/or resident objects to the aerial spray application. Properties located within that 200-foot buffer will be eligible for the ground spray application of B.t. by a contractor hired by the City. Properties within the 200-foot buffer will be required to request to be ground sprayed in order to "**opt-in**" to this part of the suppression program.

Staff recommends that Council adopt Option three: the aerial application of B.t. over the qualifying spray block, the voluntary ground spray application of B.t. within the buffer areas of objecting properties, and the distribution of burlap bands and educational materials to the public. Burlap for banding trees City-wide and educational materials will be available to the public in May and June at the Lee Center located at 1108 Jefferson Street; the Jerome "Buddie" Ford Nature

Center located at 5700 Sanger Avenue; and Fire Station No. 53 located at 2801 Cameron Mills Road. Banding trees with burlap helps monitor gypsy moth larvae and determine levels of infestation. Residents who band their trees will be reminded that they must inspect the bands and remove larvae on a regular basis for this program to be effective.

In November 2006, City staff submitted a proposal to VDACS to participate in the 2007 Virginia Cooperative Gypsy Moth Suppression Program. The State requires that the spray block have a minimum of 250 egg masses per acre, the presence of primary and secondary host tree species, and the potential for additional infestation from adjacent communities (i.e. caterpillars being wind borne into the City from Arlington and Fairfax Counties). The City's proposed suppression Program meets these requirements, qualifying the City to participate in the program and receive federal funding for a portion of the program.

In the winter of 2006, City staff will submit a request the USDA Forest Service, Forest Health Protection to present a waiver request to fly inside the restricted DC flight restriction zone. The waiver request requires specific information about the aircraft used, and the pilot, crew, and passengers. The Transportation Security Administration will review the request and will approve or deny the request in spring 2007 at the time the State is scheduled to enter into a contract with a qualified aerial applicator company.

The estimated cost of the 2007 Gypsy Moth Suppression Program is $24,432 (Attachment 2). The City's share of the projected cost is $12,966. The estimated Federal share of the cost is $11,466, which covers one half of the aerial application cost, and one half of City Staff costs to conduct the egg mass survey and program administration. Final reimbursement by the USDA Forest Services, Forest Health and Protection will be contingent upon approval of Federal funding.

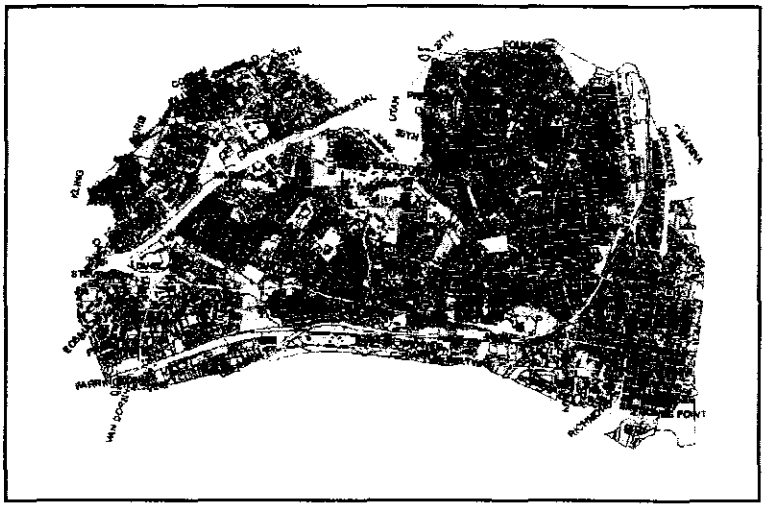
FISCAL IMPACT: The estimated cost of the suppression program is $24,432. Federal funding is projected to account for $11,466 of the total cost, reducing the City's cost to $12,966. The FY 2007 Budget includes $7,751 for gypsy moth suppression. Personnel costs ($8,100) are covered by the tree maintenance budget. The balance of the funds needed will be reallocated from other budgeted sources.

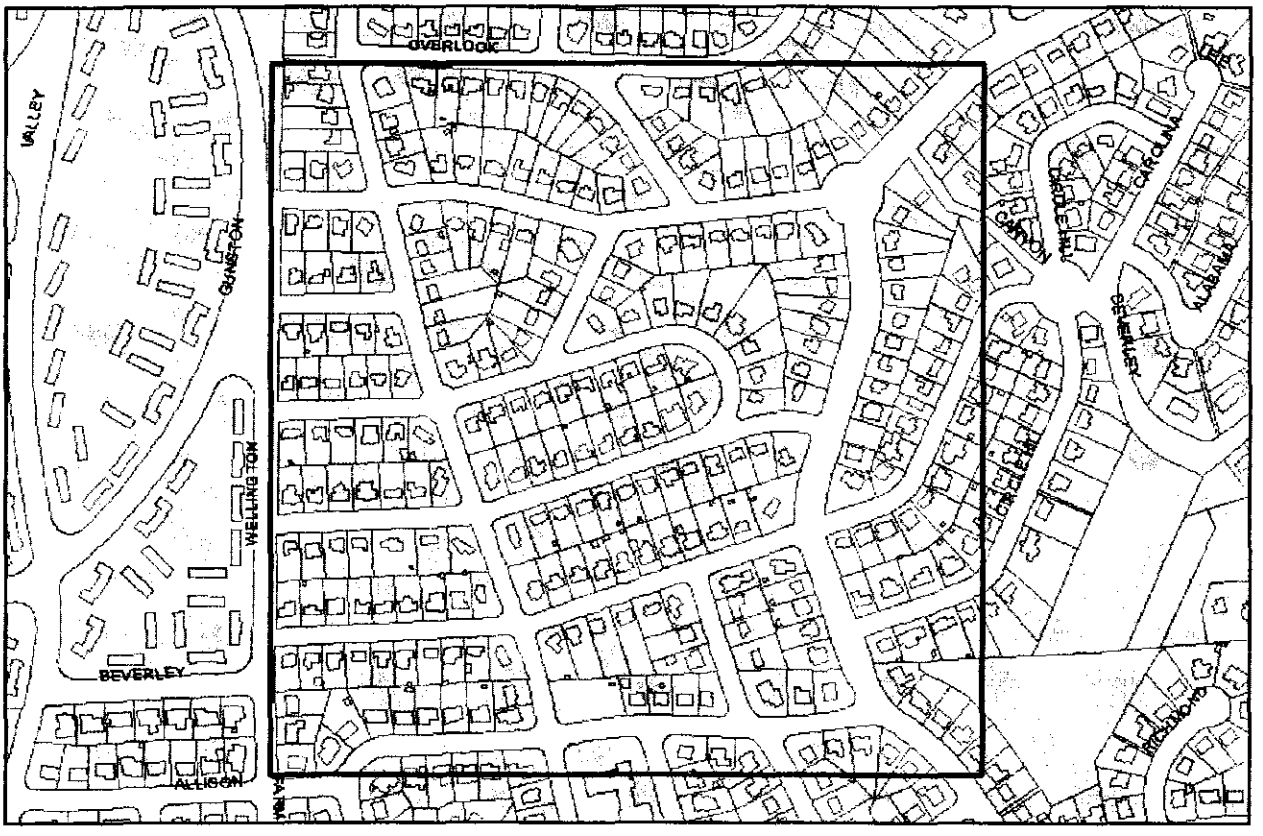
ATTACHMENTS:
Attachment 1. 2007 Gypsy Moth Suppression Program Spray Block Map
Attachment 2. 2007 Gypsy Moth Suppression Program Estimated Costs

STAFF:
Michele Evans, Deputy City Manager
Kirk Kincannon, Director, RPCA
Roger Blakeley, Deputy Director, RPCA
John Noelle, City Arborist, RPCA

Attachment 1

2007 GYPSY MOTH SUPPRESSION PROGRAM SPRAY BLOCK





Attachment 2

2007 GYPSY MOTH SUPPRESSION PROGRAM

ESTIMATED COSTS

	FEDERAL SHARE	CITY SHARE
AERIAL SPRAY SUPPRESSION PROGRAM		
Aerial spray application (75 acres @ $44.88/acre)	$ 3,366.00	$ 3,366.00
MAILINGS, NOTIFICATIONS, AND SUPPLIES		
Printing costs (300 pieces)		$ 100.00
Postal costs (300 pieces)		$ 100.00
Advertisement		$ 300.00
PERSONNEL COSTS		
Egg mass survey and suppression program	$8,100.00	$ 8,100.00
CONFERENCE AND BOOKS		
Conferences and meetings.		$ 1,000.00
TOTALS	$11,466.00	$12,966.00

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1-20-07

submitted by
Paula Sullivan

Mr. Mayor and members of Council:

I am Paula Sullivan and I would like to say a few words representing only myself on the proposed gypsy moth suppression program for 2007. I do not live in the spray block neighborhood, but in Seminary Hill. However, my interest arises from a long familiarity with the gypsy moth in Alexandria. I served on the Gypsy Moth Advisory Committee which convened from 1988-1994, the years when the city was addressing far more serious infestation of this non-native pest. Also, as a volunteer, I assisted Jerry Dieruf from 1991-1995 in monitoring trees in the city to evaluate the establishment of several gypsy moth parasites which had been released as a method of natural control. Currently, I am a member of the Urban Forestry Steering Committee.

I recognize that the insecticide to be sprayed by helicopter, Bt, is non-toxic to humans, pets, fish, and birds, and that its effectiveness is of short duration. However, it is toxic to all species of moths and butterflies that are in a larval stage at that time. That includes the cankerworm, a native insect that is the primary food for migrating birds. I believe the relatively small problem, compared to earlier years, existing in a very limited area of the city may be dealt with more conservatively, in others words, without the use of a aerial spray over a 75-acre area.

The 75-acre spray block borders on Monticello Park. Monticello Park is included among by Cornell University's Laboratory of Ornithology's 50 top birding locations in the entire US! Since 2004, a small, dedicated group of birders led by Tom Albright has been keeping meticulous records of birds at the park. Last spring, 114 species of birds were recorded there. Among them were 31 of the 36 species of warblers that migrate through the

eastern United States. Except for the stream, which does seem to attract birds to the park, the same habitat exists throughout Beverly Hills and is undoubtedly hosting high numbers of migratory birds. Migratory songbirds fly at night, and long-distance flight depletes fat reserves, which must be quickly replenished at stops along the way. Warblers don't eat flying insects and they don't eat seeds. They will suffer if caterpillars aren't available when they arrive.

Within this 75-acre spray block are only 2 survey points where the numbers of egg masses counted were in the high range, and 4 in the moderate range. Other surveyed points in that block showed low numbers or none at all. The methodology used was devised for use in forests where trees are all there is. A surveyor assesses about 1/40th of an acre standing at one spot, counts egg masses, and then multiplies by 40 on the assumption that the egg masses are probably present throughout that acre at that concentration. In a residential neighborhood, where there are about 4 homes per acre taking up space, plus streets and driveways, I believe that this mathematical model is unreliable in predicting the degree of infestation that can be expected the following spring.

The last time a spray program was recommended was for the 2002 season. The program was approved, but then canceled because of Homeland Security flight restrictions. Rather than experiencing high numbers of gypsy moth that spring, as might have been expected, there was actually a tremendous drop in gypsy moth damage throughout the entire state of Virginia, particularly in Northern Virginia, because a wet spring promoted the spread of a fungal disease deadly to gypsy moth. No spray program was recommended for the following spring. Then, in 2004 there was not a single acre of defoliation in all of Virginia. Drier conditions in 2005 and 2006

resulted in a rise in numbers, but still very low compared to historic highs of the late eighties to 1995. No one can predict this spring's weather, but if we have good rains in the spring, the fungus could again take care of the problem for us.

Aerial spraying of 75 acres seems overkill for 6 survey points where numbers at each may or may not accurately predict a serious problem. There are ways of dealing with these egg masses when they are not widespread, such as scraping those that can be reached and burlap banding the trees and removing the larvae when they appear. Ground spraying of this limited number of trees seems also a possibility. If these few homeowners are reluctant to remove caterpillars from under bands, I would personally be willing to volunteer for that chore. I've had a lot of practice.

Thank you very much for your attention.

Paula Sullivan
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