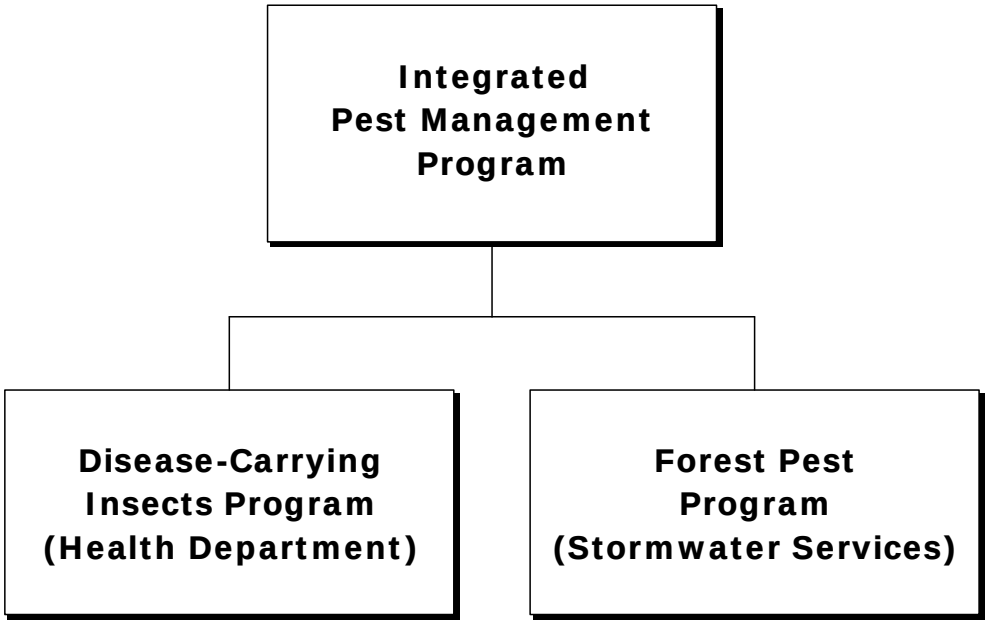
Fund 40080
Integrated Pest Management Program



Mission

To suppress forest pest infestation and insect transmitted human disease throughout the County through surveillance, pest and insect control, as well as public information and education, so that zero percent of the County tree cover is defoliated and human morbidity and mortality are minimized while protecting the environment.

Focus

Fund 40080, Integrated Pest Management Program, includes two separate programs – the Forest Pest Program managed by Stormwater Services and the Disease-Carrying Insects Program managed by the Health Department. The Forest Pest Program focuses on preventing the spread of state approved forest insects and diseases in the County. The Disease-Carrying Insects Program focuses on maintaining a low incidence of the West Nile virus, Lyme disease, and other tick-borne diseases—as the prevention of epidemics and spread of disease is one of the core functions of the Health Department.

A countywide tax levy financially supports Fund 40080 activities and this levy is subject to change annually due to funding requirements based on the level of infestation. Since FY 2001, the Board of Supervisors-approved tax rate has been $0.001 per $100 assessed value and has provided support for both the Forest Pest and the Disease-Carrying Insects Programs. In FY 2015, the same tax rate, along with the existing fund balance, will continue to support both programs.

Forest Pest Program (FPP)

The Forest Pest Program is a cooperative program with the United States Department of Agriculture (USDA) Forest Service and the Virginia Department of Agriculture and Consumer Services (VDACS). VDACS maintains a list of insects that are eligible for control by this program. Currently, five insects and two diseases are listed: the gypsy moth, cankerworm, emerald ash borer, hemlock woolly adelgid, Asian longhorned beetle, sudden oak death and thousand canker disease.

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The Forest Pest Program provides control activities for gypsy moth and the cankerworm. Surveys are conducted annually to determine both population levels and which suppression activities are warranted. The surveys check egg masses and larval densities, are conducted systematically throughout the County and are USDA Forest Service approved. The proposed treatment plan and resource requirements for these pests are submitted annually to the Board of Supervisors for approval in February. The County may also be eligible for partial reimbursement for aerial treatment costs from the federal government (assuming funding is available). Treatment is conducted in late April through early May before the gypsy moth and cankerworm can damage trees. Throughout the year, staff conducts an extensive outreach program with the goal of educating Fairfax County communities about pest suppression methods and measures that they may take to alleviate potential forest pest population infestations.

It is noted that the size of pest populations for gypsy moths and cankerworms is cyclical. Populations will be high for a period of years, then drop for a period, only to rise again. For example, in the early to mid-1990s, annual treatment requirements for the gypsy moth fluctuated from 3,000 to 45,000 acres. In recent years, gypsy moth populations have been very low. Based on field surveys conducted in the fall of 2013, staff estimates that no acres will require treatment in calendar year 2014. Cankerworm populations have increased in recent years and 2,000 acres of aerial treatment were required in calendar year 2013. Staff anticipates a moderate aerial treatment program in FY 2015. The FY 2015 budget provides capacity to treat 500 acres of ground treatment and up to 5,000 acres of aerial, should egg mass surveys conducted between August and January of that fiscal year indicate the need.

The emergence of the emerald ash borer in Fairfax County was identified by VDACS in late 2003. In an effort to ensure that the insects did not spread any further, guidance was given by the USDA Animal Plant Health Inspection Service (APHIS) regarding eradication. Eradication efforts took place in spring 2004 before the adult borers emerged. Those efforts were coordinated among Fairfax County Forest Pest Program staff, APHIS, and VDACS and federal funding for eradication efforts was provided to the state. In July 2008, staff identified three infestations in the Newington, Herndon and Bailey's Crossroads areas and one in the Fair Oaks area in July 2009. As a result of these infestations, USDA and VDACS have established a quarantine in northern Virginia which prohibits ash wood material from leaving the area. Fairfax County staff has also implemented an outreach program to inform public and private entities of the relevant state and federal regulations.

On average, County staff annually treats 2,100 acres to combat the gypsy moth infestations.

In March 2011, the Forest Pest Program added monitoring and outreach activities for two additional tree diseases (Thousand Cankers Disease of Black Walnut and Sudden Oak Death) and one additional insect (Asian Long horned Beetle) to its suppression plan.

Black Walnut (*Juglans nigra*) is a tree native to Fairfax County. In the summers of 2010 and 2011, black walnut trees were observed to be declining near Knoxville, Tennessee and Richmond, Virginia. Foresters confirmed that a disease called thousand cankers disease and the walnut twig beetle (*Pityophthorus juglandis*) that spreads it had been artificially introduced to the eastern United States from the west.

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During the summer of 2012, staff captured the walnut twig beetle at various sites in Fairfax County. VDACS isolated the thousand cankers disease fungus from these trees and has placed Fairfax County under quarantine status, similar to the conditions in place for the emerald ash borer. Staff recommends that resources in the form of an outreach program be developed in order to continue monitoring for this disease. Key targets of the outreach effort will include homeowners and private tree care companies.

Sudden Oak Death is caused by a fungus (*Phytophtora ramorum*) that has caused wide-scale tree mortality in the western United States since 1995. Fortunately, this disease has been found only in isolated locations in the eastern United States and officials feel that these infestations have been contained. Diligent monitoring is critical in slowing the spread of this disease and recent testing methods that are simple and cost-effective have been developed. Consequently, staff will implement these monitoring methods and develop a management plan that will address appropriate actions should Sudden Oak Death be found in Fairfax County. Part of this management plan will include an outreach component that will educate private and public groups on this disease and its control.

The Asian Long-horned Beetle (*Anoplophora glabripennis*) is an invasive, wood-boring beetle that, like the emerald ash borer, has the potential to have drastic economic and social impacts should it be introduced in Fairfax County. The larvae will infest and kill trees by boring into the heartwood of a tree and disrupting its nutrient flow. Imported into the United States via wood packing material used in shipping, infestations of this insect in or near Chicago, New York, Boston, and Ohio have been discovered since the mid 1990's. These pests will infest many hardwood tree species but seem to prefer maple species, one of the predominant trees in Fairfax County's urban forest ecosystem. According to the United States Forest Service, most of the infestation found in the United States have been identified by tree care professionals and informed homeowners. Consequently, staff recommends development of a management plan to address such monitoring and outreach for this invasive species.

The Integrated Pest Management Program supports the following County Vision Elements:

- ***Maintaining Safe and Caring Communities***
- ***Creating a Culture of Engagement***
- ***Connecting People and Places***
- ***Practicing Environmental Stewardship***
- ***Building Livable Spaces***
- ***Exercising Corporate Stewardship***

Quarantine Status

Agricultural quarantines are implemented for invasive pests in order to eradicate or slow their spread. The quarantines currently in effect in Fairfax County are intended to slow the spread of the target insects and not intended to eradicate them. In the United States, eradication is only attempted when an invasive is discovered early and its populations are small enough to be contained. There are no set end dates to the quarantines in Fairfax County.

Typically, a quarantine is established by a state and by the United States Department of Agriculture on a county by county basis. Once a sufficiently large enough area is infested, the state will determine that all of the state is generally infested and the issue is taken over by USDA. Forest pest quarantines are not an unusual or a historically recent method of controlling the spread of pests. The gypsy moth was first quarantined by state and federal governments in 1912 and continues to be quarantined today. Research has proven that by slowing the spread of an invasive insect, uninfested localities can avoid the extraordinary costs of attempting to control it.

Emerald Ash Borer (EAB) was first quarantined in northern Virginia in 2008. Since that time numerous sites around the state have been confirmed as infested with EAB. In the summer of 2012, the Virginia Department of Agriculture and Consumer Services determined that the entire state is generally infested and is now part of the USDA quarantine. Presumably, this quarantine will stay in effect indefinitely.

Thousand cankers disease (TCD) is relatively new in regard to forest health issues. This disease is spread by a tiny bark beetle and is very difficult to detect. Staff found the bark beetle in Fairfax County in the summer of 2012, and VDACS reacted by implementing a quarantine of all walnut products. Currently, several counties in Virginia are under quarantine for TCD. If and when the disease/bark beetle is found in sufficient numbers it is expected that VDACS will quarantine the entire state. There is no existing federal regulation in regard to TCD. It is unclear at this time, what will happen if the entire state or other states detect this disease.

Outreach

The Forest Pest Program has used outreach as a management tool since the early 1980's. With the addition of TCD, EAB, and the potential for the appearance of sudden oak death (SOD) and Asian Long-horned Beetle (ALB) staff has modified the program's outreach activities. During the last fiscal year, staff have:

- Modified the County Internet site to include the new pests. Slide share presentations have been included that give seasonal tree care information. Online information is intended primarily for homeowners and provides pest identification tools and contact information for staff.

- Offered educational programs to school children. During the 2012-2013 school year, staff conducted school outreach activities to 1,248 pupils. Different curriculum were developed to address age groups as appropriate and these programs satisfied Science Standards of Learning (SOL) requirements for 3.5c, 3.5 (d), 3.8, 3.10, 4.4, 4.5, 4.8 (a,b,d), LS.4 (a), LS 6, LS.9(b), LS.11 (b), BIO 3 (d), BIO 9 (d,e). Staff also presented education programs for 220 children at various School-Age Child Care program sites.

- Hosted and lead a Project Learning Tree workshop for Northern Virginia educators. Project Learning Tree is an environmental education curriculum that promotes the importance of trees and the environment.

- Attended County functions such as Celebrate Fairfax, Fall for Fairfax, Arbor Day, and the 4-H Fair. Emphasis at these events was directed towards the new emerging forest pest issues of the County. During Arbor Day and Fall for Fairfax, staff organized community volunteers to plant 58 trees with the goal of educating the public on proper tree planting techniques.

- Continued participation in the Capital Region Invasive Pest Symposia (CRIPS). This group is composed of public and private professionals in the forest health field. The mission of this group is to exchange ideas and ensure that all are aware of emerging pest issues. This group meets periodically and discusses issues in a roundtable manner and attendance is usually between 35 and 75 individuals. Speakers are usually invited to address a particular topic. CRIPS hosted two meetings regarding invasive species management.

- Assisted in developing, "A Field Guide to Fairfax County's Plants and Wildlife." This field guide is to be used as part of the fifth grade Field of Science curriculum.

- Helped create Channel 16 Public Service Announcements (PSA) for gypsy moth and cankerworm.

- Assisted the Office of Public Affairs with outreach efforts in regard to Brood II, periodical cicada emergence. Activities included a Channel 16 PSA and Internet chat session for "Ask Fairfax!"

Management Plans
The nature of invasive insects and diseases is such that it is difficult to make long-term predictions on monitoring techniques and response plans. USDA has drafted a management plan for ALB; it outlines a role for localities consistent with what staff had envisioned. For example, County staff can play a critical role in public meetings, notification and mapping. VDACS and the Forest Pest Program are currently drafting management plans for ALB and SOD. The management plans will act in concert with plans in place by USDA. These plans are in the process of being completed.

Monitoring techniques for ALB and SOD are developing and rapidly changing. Staff is staying informed and will implement changes as appropriate.

Disease-Carrying Insects Program

West Nile Virus and other mosquito diseases
The West Nile virus (WNV) is transmitted from birds to humans through the bite of infected mosquitoes and continues to be a public health concern. The first sign of the virus in Fairfax County was in calendar year (CY) 2000 when a dead bird was found infected. The first human cases were detected in CY 2002 and, to date, 34 human cases have been detected. More recently, eight human cases were detected in CY 2012. In total, thee WNV associated deaths have occurred—one each in CY 2002, 2004, and 2012.

Inter-jurisdictional cooperation is a key component of the program, allowing for coordination of surveillance and management activities on public lands and with surrounding jurisdictions.

Mosquito and WNV surveillance activities are performed weekly by County staff from May through October. Mosquito surveillance activities also allow the Disease-Carrying Insects Program (DCIP) to monitor for invasive mosquito species. In FY 2012, the Health Department lab began testing mosquitoes for WNV using molecular diagnostics (Reverse-Transcriptase Polymerase Chain Reaction or RT-PCR). Contracted services have been retained for the more labor-intensive preemptive mosquito control activities that require a significant fleet of vehicles and specialized equipment and pesticide storage and supply. The County continues to proactively treat the storm drains in an effort to reduce the population of *Culex* mosquitoes that transmit WNV. Storm drains are treated in three six-week cycles from May through October. The larvicide used will be changed periodically to avoid and lessen resistance.

Weather conditions are the principal factors that determine the number of storm drains that will be treated any given year. Inspection and larviciding activities are carried out in targeted areas of the County identified as significant mosquito breeding areas. These programs and services will continue in FY 2015.

Lyme diseases and other tick-borne diseases

The bacterium that causes Lyme disease is transmitted from small mammals to humans through the bite of an infected deer tick, also known as the black legged tick (Ixodes scapularis), and continues to be a growing public health concern. In Fairfax County, there were 146 human cases of Lyme disease reported in CY 2011, 150 cases in CY 2012 and 202 cases in CY 2013. Other tick-borne diseases reported in Fairfax County are: Spotted Fever Group Rickettsias (20 cases in CY 2011, 26 in CY 2012 and 20 cases in CY 2013); Ehrlichiosis/Anaplasmosis (17 cases in CY 2011, six cases in CY 2012 and 10 cases in CY 2013); and Q fever (no cases in CY 2011, CY 2012,or CY 2013).

The County tick surveillance program was initiated to determine the distribution and infection rate of the bacterium (*Borrelia burgdorferi*) that causes Lyme disease. Contract services have been obtained for the molecular identification (Polymerase Chain Reaction or PCR) of the various pathogens that may be transmitted by the four human-biting tick species in the County. The DCIP offers a tick identification service for County residents at no charge to inform them of the type of tick that has bitten them. In FY 2011, DCIP detected the establishment of a non-native species of tick in the County (i.e., the Gulf Coast tick, *Amblyomma maculatum*) that is the vector of a bacterium (*Rickettsia parkeri*) causing a spotted fever disease. Following detection, focused efforts are being used to monitor and try to eliminate this population. These programs and services will continue in FY 2015.

In FY 2010, the groundwork was laid for a collaborative three year tick control pilot project between the Police Department and the Health Department's Disease-Carrying Insect Program. Supplemental feeding stations, known as four-poster deer treatment stations, were deployed to two areas of the County. These devices apply an insecticide to the deer while they are feeding, thus killing the ticks that are on the deer. Two test and two control areas are being utilized for a total of 20 stations in the two test areas of the County. Tick surveillance in the two test and two control areas began in FY 2010 and will continue until the end of the three year project. The four-poster stations were deployed in the two test areas in the spring of CY 2012.

Outreach and Education

The outreach and education component of the DCIP is aimed at increasing residents' awareness of personal protection actions that can be taken against mosquitoes and ticks, and the reduction of mosquitoes, ticks, and mosquito breeding areas on private property. The program continues to produce and distribute outreach material in English, Chinese, Farsi, Korean, Spanish, Urdu and Vietnamese. In FY 2013, the program produced and printed the ninth edition 18-month "Fight the Bite" calendar with complementary captions, facts, figures, important dates, and helpful reminders of things for readers to do around the home to manage mosquitoes and ticks. In addition, the calendar provides helpful hints to protect residents from mosquito- and tick-borne diseases. General facts, local figures and brief descriptions of the County's efforts were included to educate the public about basic mosquito and tick biology and inform them specifically about mosquitoes, ticks, West Nile virus and Lyme disease in Fairfax County. A fifth children's book about mosquitoes and ticks entitled, The Sinister Secret of the Stinky Storm Drain, was printed in late FY 2013. A new tick awareness brochure for children was developed in FY 2013 and is available in English, Spanish, and Korean. All the educational material is available on the County's Web site. In early FY 2014, the DCIP received a Grand Award in the 2013

APEX Awards for Publication Excellence competition. The award was for the submission entitled, "Fight the Bite: Teaching Kids about Mosquitos and Ticks," in the campaigns, programs, and plans category.

Budget and Staff Resources

Category	FY 2013 Actual	FY 2014 Adopted	FY 2014 Revised	FY 2015 Advertised
FUNDING				
Expenditures:				
Personnel Services	$1,116,497	$1,271,763	$1,282,743	$1,287,808
Operating Expenses	940,522	1,827,847	1,934,112	1,827,847
Capital Equipment	38,458	0	0	0
Total Expenditures	$2,095,477	$3,099,610	$3,216,855	$3,115,655
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	12 / 12	12 / 12	12 / 12	12 / 12

Summary by Program

Category	FY 2013 Actual	FY 2014 Adopted	FY 2014 Revised	FY 2015 Advertised
Forest Pest Program				
EXPENDITURES				
Total Expenditures	$825,396	$1,098,568	$1,105,316	$1,105,927
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	7 / 7	7 / 7	7 / 7	7 / 7
Disease-Carrying Insects Program				
EXPENDITURES				
Total Expenditures	$1,270,081	$2,001,042	$2,111,539	$2,009,728
AUTHORIZED POSITIONS/FULL-TIME EQUIVALENT (FTE)				
Regular	5 / 5	5 / 5	5 / 5	5 / 5

FOREST PEST PROGRAM

1 Urban Forester III
4 Urban Foresters II
1 Administrative Assistant II
1 Information Technology Technician III

DISEASE-CARRYING INSECTS PROGRAM

1 Environmental Health Supervisor
1 Environmental Health Specialist III
2 Environmental Health Specialists II
1 Administrative Assistant III

TOTAL POSITIONS
12 Positions / 12.0 FTE

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FY 2015 Funding Adjustments

The following funding adjustments from the FY 2014 Adopted Budget Plan are necessary to support the FY 2015 program.

- **Employee Compensation** **$16,045**
  An increase of $16,045 in Personnel Services reflects funding for a 1.29 percent market rate adjustment for all employees in FY 2015, effective July 2014.

Changes to FY 2014 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2014 Revised Budget Plan since passage of the FY 2014 Adopted Budget Plan. Included are all adjustments made as part of the FY 2013 Carryover Review, and all other approved changes through December 31, 2013:

- **Carryover Adjustments** **$117,245**
  As part of the *FY 2013 Carryover Review*, the Board of Supervisors approved funding of $117,245, including $10,980 in Personnel Services for a one-time compensation adjustment of $850 for merit employees paid in November 2013, and $106,265 in encumbered funding in Operating Expenses for contractual obligations for the treatment of storm drains and the tick testing program within the Disease Carrying Insect Program.

Key Performance Measures

Indicator	Prior Year Actuals			Current Estimate	Future Estimate
	FY 2011 Actual	FY 2012 Actual	FY 2013 Estimate/Actual	FY 2014	FY 2015
Integrated Pest Management Program					
Percent of County tree defoliation resulting from gypsy moth and cankerworm infestation	0%	0%	1%/1%	1%	1%
Confirmed human cases of West Nile virus in Fairfax County, Fairfax City and Falls Church City as reported by the Virginia Department of Health	1	1	1/8	1	1

A complete list of performance measures can be viewed at www.fairfaxcounty.gov/dmb/fy2015/advertised/pm/40080.pdf

Performance Measurement Results

Forest Pest Program

There was no aerial treatment for the gypsy moth in the spring of 2013. Based on field surveys of the gypsy moth population in the fall of 2013, staff estimates no acres will require treatment in the spring of 2014. Based on surveys for the cankerworm, 2,000 acres of treatment were necessary in the spring of 2013, and it is estimated that 2,000 acres will be required in the spring of 2014. Defoliation surveys for both insects conducted in the summer of 2013 indicated that there was very little defoliation in Fairfax County during FY 2013, totaling approximately 1 percent.

Disease-Carrying Insects Program (DCIP)

The goal of DCIP in FY 2014 is to hold the number of human cases of West Nile virus (WNV) as reported by the Virginia Department of Health to one case. In FY 2013, there were eight human cases of WNV, including one WNV-related death, in the County. The rise in reported cases may be attributed to a nationwide increase in human WNV cases during FY 2012, which brought about a heightened level of awareness.

DCIP costs are based on the number of storm drain treatments and other larvicide treatments carried out by a contractor in a given year, as well as education, outreach and surveillance activities carried out in-house by DCIP. Treatment, although dependent on weather conditions, remain relatively constant throughout the years, maintaining a relatively stable program cost. The total DCIP cost per capita was $1.10 in FY 2013. This is lower than the budgeted estimate of $1.77 per capita due to fewer treatments being done as a result of unfavorable weather conditions. The estimated cost for FY 2014 is based on a higher cost per capita; however, actual spending will depend on environmental factors, insecticide treatments resulting from larval inspections and surveillance activities, as well as follow-up studies for the evaluation of the outreach program.

The tick surveillance program continues in FY 2014. This program will increase the understanding of the magnitude and breadth of tick-borne diseases in the County. The DCIP has a contract in place to test the ticks for pathogens they may transmit. The increased testing of ticks for pathogens and the four-poster deer treatment pilot project will also impact DCIP cost per capita until the end of FY 2015.

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FUND STATEMENT

Fund 40080, Integrated Pest Management Program

	FY 2013 Actual	FY 2014 Adopted Budget Plan	FY 2014 Revised Budget Plan	FY 2015 Advertised Budget Plan
Beginning Balance	$2,862,842	$1,536,523	$2,756,702	$1,253,506
Revenue:				
General Property Taxes	$1,978,951	$1,843,968	$1,843,968	$2,182,547
Interest on Investments	10,386	7,691	7,691	7,691
Total Revenue	$1,989,337	$1,851,659	$1,851,659	$2,190,238
Total Available	$4,852,179	$3,388,182	$4,608,361	$3,443,744
Expenditures:				
Forest Pest Program	$825,396	$1,098,568	$1,105,316	$1,105,927
Disease-Carrying Insects Program	1,270,081	2,001,042	2,111,539	2,009,728
Total Expenditures	$2,095,477	$3,099,610	$3,216,855	$3,115,655
Transfers Out:[1]				
General Fund (10001) - Forest Pest Program	$0	$65,039	$65,039	$65,039
General Fund (10001) - Disease-Carrying Insects Program	0	72,961	72,961	72,961
Total Transfers Out	$0	$138,000	$138,000	$138,000
Total Disbursements	$2,095,477	$3,237,610	$3,354,855	$3,253,655
Ending Balance[2]	$2,756,702	$150,572	$1,253,506	$190,089
Tax Rate Per $100 of Assessed Value	$0.001	$0.001	$0.001	$0.001

[1] Beginning with the FY 2014 Adopted Budget Plan, a transfer to the General Fund is included to partially offset central support services supported by the General Fund which benefit Fund 40080, Integrated Pest Management. These indirect costs include support services such as Human Resources, Purchasing, Budget and other administrative services.

[2] Due to the cyclical nature of pest populations, the treatment requirements supported by this fund may fluctuate from year to year. Therefore, Ending Balances may also fluctuate depending on the level of treatment necessary to suppress gypsy moth, cankerworm, emerald ash borer or West Nile Virus - carrying mosquito populations in a given year.