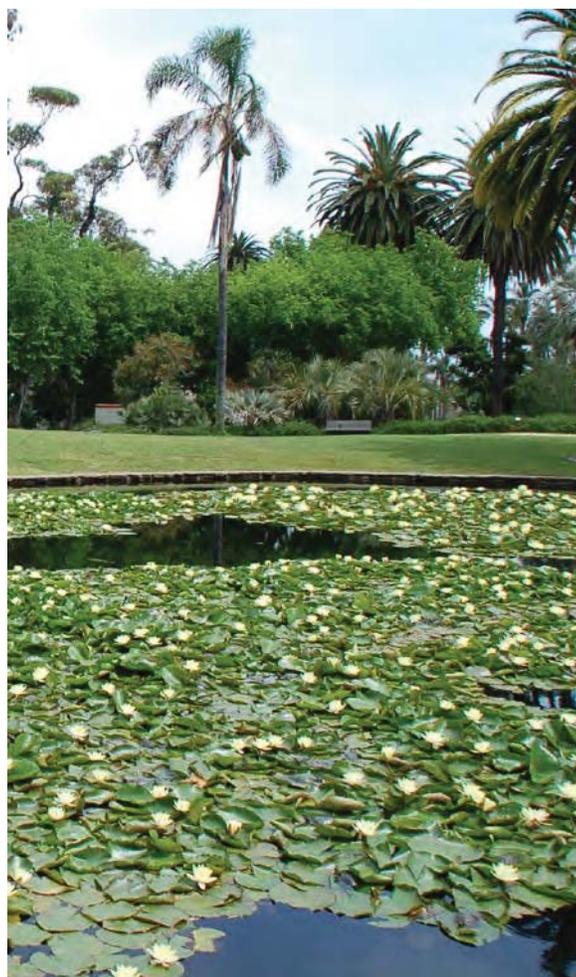




**City of Santa Barbara
Integrated Pest Management Strategy**

DRAFT 2013 Annual Report

Prepared March 2014



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I. BACKGROUND

In January 2004, the City of Santa Barbara (City) adopted a City-wide Integrated Pest Management (IPM) Strategy. The City's IPM Strategy was developed to help reduce pesticide hazards on City property and promote effective pest management. The IPM Strategy required the development of a "Zone System" tied to the IPM Approved Materials List to limit pesticide use based on potential human exposure. In February 2006, the City Council approved the PHAER Zone system to be incorporated into the IPM Strategy.

The PHAER Zone system assigns Green, Yellow, or a Special Circumstance/Red Zone designation to sites, or portions of sites, based upon the potential for exposure by humans and sensitive habitat to hazardous pesticides, and allows use of carefully screened materials by zone designation. For example, Green Zones are areas of high exposure potential, and only pesticides designated as "Green", which show very limited human and environmental impacts, may be used. Yellow Zones are areas with less potential for harm from exposure, and a broader range of "Yellow" materials are permitted under the PHAER Zone system.

2013 Annual Report

The IPM Strategy requires preparation of an Annual Report. The 2013 Annual Report addresses each of the following areas:

- Types of pest problems that each Department has encountered
- Types and quantities of pesticides used by each Department
- Exemptions currently in place and granted during the past year
- Alternatives currently used for phased out pesticides
- Alternatives proposed for adoption within the next 12 months
- Effectiveness of any changes in practices implemented
- Planned changes to pest management practices

This is the eleventh Annual Report for the program.

Citizen and Staff IPM Advisory Committees

City Council established the Citizen IPM Advisory Committee by Resolution No. 06-008. Committee members are appointed by the Parks and Recreation Commission to serve two-year terms. The purpose of the Committee is to review and advise on the implementation of the City's Integrated Pest Management Strategy.

In 2013, the Citizen IPM Advisory Committee met twice to discuss and act on IPM policies and practices. The 2013 Citizen IPM Advisory Committee included the following representatives:

- Greg Chittick, Community at large
- Larry Saltzman, Pesticide Awareness and Alternative Coalition
- Kristen LaBonte, Community at large

The Staff IPM Committee, consisting of Department IPM Coordinators, continued to work effectively with the Citizen IPM Advisory Committee to administer the IPM Strategy and oversee pest management practices.

Department IPM Coordinators are representatives appointed by Department Directors to serve on the Staff IPM Committee. Department representatives: Jeff McKee from the Airport, Sue Gray from Community Development, Joe Poire from Fire, James Dewey from Public Works, Judd Conley from the Waterfront, and Santos Escobar from Parks and Recreation.

The Parks and Recreation Department coordinates both the Citizen and Staff IPM Committees and oversees the implementation of the City's IPM Program.

Citizen IPM Advisory Committee Actions

The Citizen IPM Advisory Committee met twice in 2013, to review 22 requests for exemptions, consult with staff on current pest issues and IPM practices, and approve the 2012 IPM Report. In 2013, there were no IPM Advisory Committee dissensions. All exemptions were approved unanimously

II. 2013 PROGRAM SUMMARY

Overall pesticide use increased from 1,915 in units in 2012 to 3,525 units in 2013. The use of Green materials increased from 1,121 units in to 2,339 units. The use of Yellow materials increased from 779 units to 1,159 units. The use of Red materials increased from 15 units to 28 units. The majority of the overall increase is due to increased mosquito control at the Airport. The control of mosquitoes accounted for 96% of all the pesticide units used City-wide in 2013. Of the pesticide units used City-wide to control mosquitoes, 66% are Green category materials.

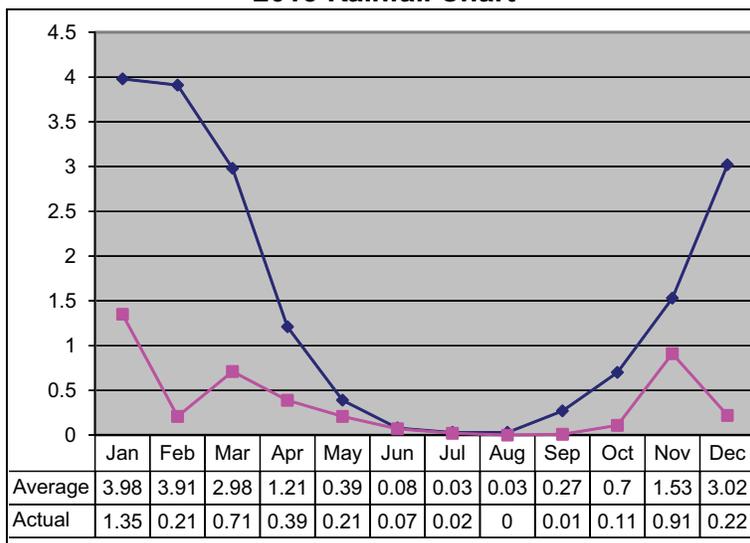
The table below is a summary of pesticide use for 2013, including any increase or decrease in material use from 2012. It is important to note that because pesticide use will vary from year to year, an increase or decrease from the previous year does not necessarily indicate a long-term trend. Many factors affect the amount of pesticides applied in any one year.

| Department / Division | Material Use | | | | Change from 2012 |
|-------------------------|----------------|----------------|--------------|----------------|------------------|
| | Green | Yellow | Red | Total | |
| Airport Department | 2049.07 | 1123.78 | 0.00 | 3172.85 | Up 192% |
| Golf Division | 0.99 | 0.53 | 27.67 | 29.19 | Up 125% |
| Parks Division | 0.15 | 24.05 | 0.00 | 24.20 | Down 21% |
| Public Works Department | 288.57 | 10.29 | 0.00 | 298.86 | Down 62% |
| City-Wide Total | 2338.78 | 1158.65 | 27.67 | 3525.10 | Up 84% |

One of the main factors that determine pest populations is rainfall. The more rain an area receives in a year, the greater the population of insects and weeds.

The graph below shows the rainfall activity for the 2013 calendar year. The total rainfall was 4.2 inches, substantially less than the 2012 rainfall of 13.8 inches. Although reduced rain, especially in spring, reduces the mosquito breeding cycle and the need for pesticides used in mosquito control, the Airport Department experienced a significant increase in mosquito populations due to the closure of the Goleta Slough to the ocean. Higher water levels in the slough and Airport creeks created additional breeding grounds for mosquitoes. This required the Airport Department to use more materials to control mosquitoes.

2013 Rainfall Chart



III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2013 as outlined in the table below. Departments ranked their top three pest problems with the numbers 1, 2 and 3. Other pest problems encountered are checked (✓). Footnote annotations reference additional information.

Pest Problems Encountered Table

| | | Airport | Creeks | Golf | Parks | Parking | Public Works | Waterfront |
|---------------------|----------------------------|---------|--------|----------------|----------------|---------|--------------|------------|
| Plant pests | Giant whitefly | ✓ | | | ✓ | ✓ | ✓ | |
| | Misc. plant insects | | | ✓ | ✓ ³ | 3 | ✓ | |
| | Disease | ✓ | | 1 ¹ | ✓ ⁴ | ✓ | | |
| Specimen Tree Pests | Oak Worm | | | | ✓ | 2 | ✓ | |
| | Psyllids | | | | ✓ | | | |
| Weeds | Invasives | ✓ | ✓ | 3 ² | 1 ⁵ | | | |
| | General weeds | 3 | ✓ | ✓ | 1 | 1 | ✓ | 3 |
| | Perennial grasses | ✓ | ✓ | ✓ | 1 ⁶ | | ✓ | ✓ |
| Vertebrates | Gopher | 2 | ✓ | 2 | 2 | | ✓ | ✓ |
| | Ground Squirrel | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| | Gulls/ nuisance birds | ✓ | | ✓ | ✓ | ✓ | | 2 |
| | Moles | | | ✓ | ✓ | | | |
| | Raccoons | ✓ | | ✓ | | | | |
| | Skunks | ✓ | | ✓ | | | | |
| Human Health | Poison Oak | ✓ | | | ✓ | | | |
| | Bees, yellow jackets, etc. | ✓ | | ✓ | 3 | ✓ | 2 | |
| | Rats/ mice | ✓ | | ✓ | ✓ | ✓ | 3 | 1 |
| | Mosquitoes | 1 | | ✓ | ✓ | | 1 | |
| Other | Termites | ✓ | | | | | ✓ | |
| | Roaches | | | | | | ✓ | |
| | Pigeons | ✓ | | | | ✓ | ✓ | |
| | Crows | ✓ | | ✓ | | | | |
| | Ants | ✓ | | | | ✓ | ✓ | |

1. Golf reported these plant diseases (fungus): Dollar Spot, Pink Snow Mold, Anthracnose, and Yellow Patch.
2. Golf reported this invasive weed: Clover.
3. Parks reported these plant insects: Lerp Psyllids, Mites, Oak Moths, Thrips, Aphids, Snails, Slugs, and Ants.
4. Parks reported these plant diseases: Leaf Spot, Mildew, Blight, Pink Bud Rot, Sooty Mold, Pythium, Armillaria, and Phytothora.
5. Parks reported these invasive weeds: Arrundo, Nutgrass, Kikuyu Grass, Clover, Oxalis, Malva, Foxtail, Spurge, Dandelion, Milkweed, Sow Thistle, Poa annua, Puncture Vine, Johnson Grass, and Poison Oak.
6. Parks reported the following perennial grasses: Crab, and Bermuda.

IV. TOTAL PESTICIDE USE

Data has been collected for City-wide pesticide application under the PHAER Zone model since 2006. This data is plotted in the graphs on subsequent pages. The graphs illustrate the various reductions and increases in pesticide use by each Department. A City-wide narrative is provided as well as one for each Department describing the particular pest issues faced this year, alternatives used, exemptions requested.

There are a number of factors that affect pesticide use. These include weather patterns (unseasonably dry or wet weather), introduction of new, or changes to existing pest populations, and changes in the effectiveness or availability of pesticide materials.

As the program continues into its twelfth year, the impact of reduced reliance on pesticides, particularly herbicides, is becoming noticeable in areas, such as the weed population at Alice Keck Park Memorial Gardens and other landscape areas throughout the City. Budget and staffing levels will continue to be a challenge. Financial constraints may require a change in service levels and aesthetic expectations or a greater reliance on more cost effective traditional pesticides. However, the City is committed to the use of Green materials, so it is likely that the overall units of pesticides applied will increase. Green materials generally require higher application levels than Red or Yellow pesticides. A rise in Green material use, even though it increases the over-all pesticide use in the City, will generally mean a reduction in the application of higher risk Yellow and Red materials.

City-wide Pesticide Use

City-wide pesticide use increased in 2013, mainly due to the use of materials to manage mosquito populations at the Airport. Pesticides applied increased from 1,915 units in 2012 to 3,525 in 2013. The use of Green materials increased from 1,121 units to 2,339 units. The use of Yellow materials increased from 779 units to 1,159 units, and Red materials increased from 15 units to 28 units. The control of mosquitoes accounted for 97% of all the pesticide units used City-wide in 2013.

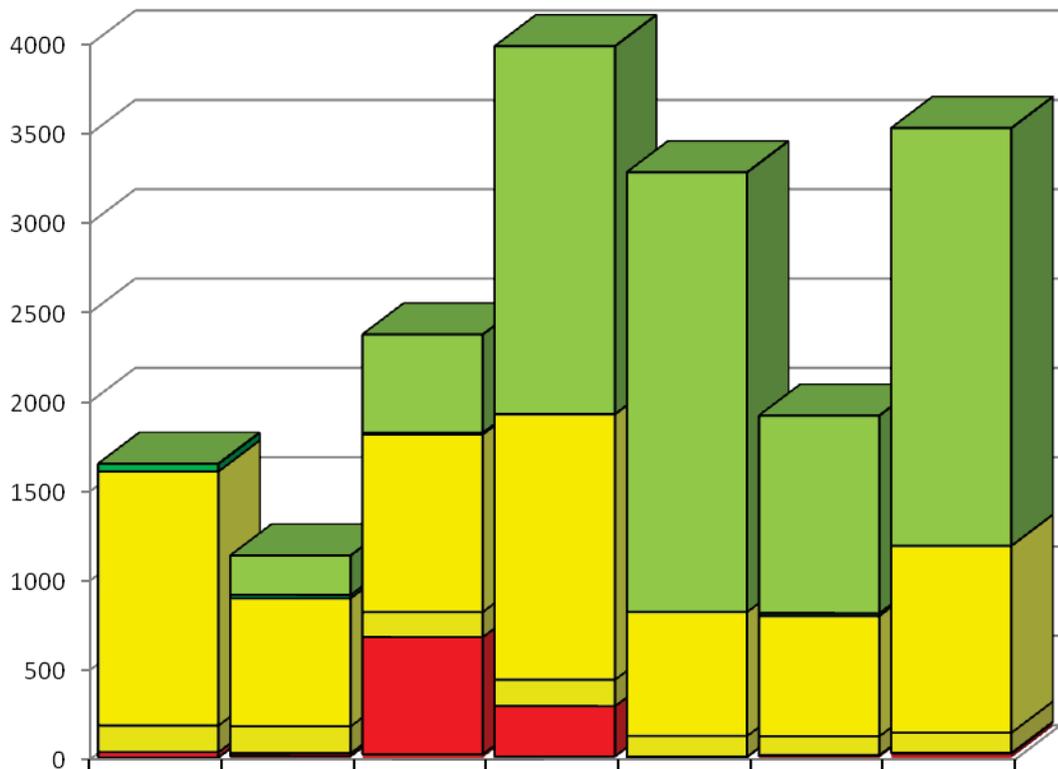
The table below provides a summary of the pesticides applied on City property in 2013. Pesticides are reported in either pounds or gallons depending on whether they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and Rodenticide. The data used to generate the total overall pesticide use is based upon total units (gallons or pounds) of all materials.

City Departments who applied pesticides, or contracted with pesticide applicators, prepared monthly pesticide and alternative use reports, and participated in the preparation of this Annual Report. The monthly reports form the basis of the Annual Report and are available at the main offices of each Department.

Total Pesticide Use Table

| Tier | Pesticide Name | Active Ingredient | Type | Amount of Pesticide Applied | | | | | | | | | | | | | |
|--------------------------|--------------------------|-----------------------|-------------|-----------------------------|----------|-------------------------|--------|----------------------|--------|-------------------------|--------|--------------|------|----------------------|--------------|---|----|
| | | | | Airport | | Golf | | Parks and Recreation | | Public Works | | Applications | | | | | |
| | | | | Gallons | Pounds | Gallons | Pounds | Gallons | Pounds | Gallons | Pounds | Airport | Golf | Parks and Recreation | Public Works | | |
| | Acelepryn | Chlorantraniliprole | Insecticide | | | 0.25 | | | | | | | | | 1 | | |
| | EcoExempt | Clove Oil | Herbicide | | | | | 0.12 | | | | | | | | 1 | |
| | Mpede | Potassium fatty acids | Insecticide | | | | | 0.03 | | | | | | | | 1 | |
| | Natular XRT | Spinosad | Larvicide | | 1.9 | | | | | | | | | 5 | | | |
| | Primo Maxx | Trinexapac-ethyl | Regulator | | | 0.74 | | | | | | | | | 10 | | |
| | Tim-Bor | Borate | Insecticide | | | | | | | 1.25 | | | | | | | 2 |
| | Vectobac G | Bti | Insecticide | | 1598.17 | | | | | 287.32 | | | 61 | | | | 31 |
| | VectoLex CG | B. sphaericus | Insecticide | | 449 | | | | | | | | 8 | | | | |
| | Green Totals | | | 0 | 2049.07 | 0.99 | 0 | 0.15 | 0 | 0 | 288.57 | 74 | 11 | 2 | 33 | | |
| | Advion Gel | Indoxacarb | Insecticide | 0.004 | | | | | | 0.08 | | 4 | | | | | 7 |
| | Advion Granuals | Indoxacarb | Insecticide | | | | | | | | 7 | | | | | | 6 |
| | Altosid 30 day pellets | Methoprene | Insecticide | | 0.30 | | | | | | | 2 | | | | | |
| | Altosid XR-B | Methoprene | Insecticide | | 1,038.10 | | | | | | | 9 | | | | | |
| | Arilon | Indoxacarb | Insecticide | | | | | | | 0.16 | | | | | | | 2 |
| | Polaris | Imazapyr | Herbicide | | | | | 3.5 | | | | | | | | | 1 |
| | Rose Defense | Neem Oil | Insecticide | | | | | | | 3 | | | | | | | 4 |
| | Round Up Custom | Glyphosate | Herbicide | | | | | 7.35 | | | | | | | | | 13 |
| | Round-up Pro Max | Glyphosate | Herbicide | 40.375 | | 0.25 | | 13.2 | | | | 10 | 1 | | | | 31 |
| | Surflan | Oryzalin | Herbicide | 45 | | | | | | | | 6 | | | | | |
| | Termidor SC | Fipronil | Insecticide | | | | | | | 0.05 | | | | | | | 6 |
| | Trimmit 2SC | Paclobutrazol | Regulator | | | 0.28 | | | | | | | | | 1 | | |
| | Yellow Totals | | | 85.379 | 1038.4 | 0.53 | 0 | 24.05 | 0 | 3.13 | 7.16 | 31 | 2 | 49 | 21 | | |
| | 3336 Cleary's | Thiophanate-methyl | Fungicide | | | 4 | | | | | | | | | 1 | | |
| | Banner-maxx | Propiconazole | Fungicide | | | 3.68 | | | | | | | | | 6 | | |
| | Daconil | Chlorothalonil | Fungicide | | | 14.24 | | | | | | | | | 5 | | |
| | Heritage | Azoxystrobin | Fungicide | | | 2.68 | | | | | | | | | 4 | | |
| | Medallion | Fludioxonil | Fungicide | | | 3.07 | | | | | | | | | 2 | | |
| | Red Totals | | | 0 | 0 | 24.6 | 3.07 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| | Department Totals | | | 85.379 | 3087.47 | 26.12 | 3.07 | 24.2 | 0 | 3.13 | 295.73 | 105 | 31 | 51 | 54 | | |
| City-wide Totals: | | | | Gallons 138.829 | | Pounds 3,386.270 | | | | Applications 241 | | | | | | | |

City-wide Pesticide Use



| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------|--------|-------|-------|--------|--------|--------|----------|
| Green Pounds | 0.5 | 220 | 549.5 | 2058.2 | 2461.1 | 1105.3 | 2,337.64 |
| Green Gallons | 42.9 | 19 | 10 | 2.2 | 0.28 | 15.7 | 1.14 |
| Yellow Pounds | 1421.9 | 717.1 | 993.4 | 1485.3 | 693.6 | 673.6 | 1,045.56 |
| Yellow Gallons | 149 | 150.4 | 140.5 | 148.1 | 115.2 | 105.5 | 113.09 |
| Red Pounds | 30.5 | 16.2 | 656.3 | 281.9 | 3 | 4.6 | 3.07 |
| Red Gallons | 1.2 | 9.2 | 19.7 | 7.3 | 4 | 10.4 | 24.6 |

Parks Division Pesticide Use

Pesticide use by the Parks Division increased in 2013. The Parks Division decreased its use of Green materials from 16 units to 0.15 units due to their ineffectiveness to address weed problems. There was an increase in Yellow materials from 15 units to 24 units due to increased weed control efforts for invasives in open space areas. No Red materials were used this year.

Alternatives Used

The Parks Division performed 7,998 hours of alternative pest management. The Parks Division used a weed flamer on sidewalk cracks and rocky areas as well as applied 567 yards of mulch and 70 yards of biosolids in planter areas and turf. As in previous years, the majority of hours were spent hand-weeding and hoeing, as well as mechanical weeding with power equipment. Weed whips and sod cutting are effective methods for removing rhizomes. Weed levels continue to be a challenge; weeds have both an aesthetic impact, as well as an ecological impact by harboring and spreading pests and disease.

Various other alternatives were practiced in 2013, including trapping for mice, rats, and squirrels and the continued use of worm castings and the beneficial fungus mycorrhizae. The Parks Division also continues to search for alternative herbicides in hopes of finding effective products.

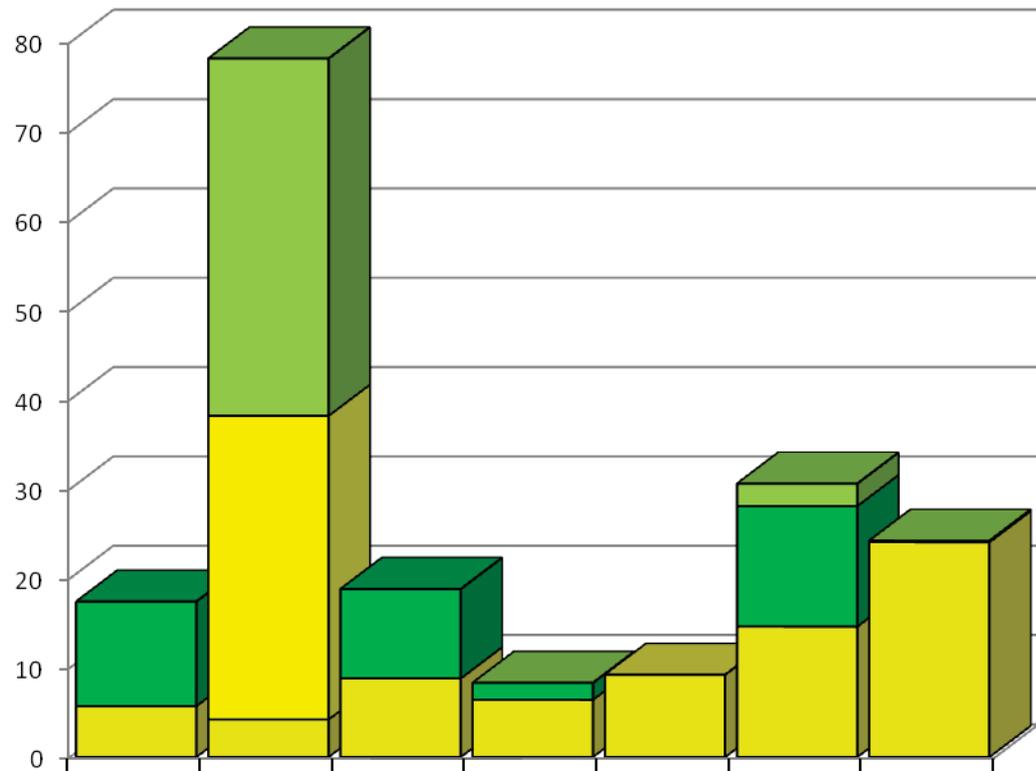
Gopher and mole activity continued to be high. The Parks Division significantly increased gopher trapping activities to try and minimize damage to the turf and planter areas that are affected. Gopher holes and mounds create safety issues, particularly in turf areas and sports fields.

Exemptions

The Parks Division applied for four exemptions. Three exemption requests were made for the use of Glyphosate at Parma Park to eradicate invasive weeds. These exemptions were granted and used successfully. An exemption was requested for the use of Diphacinone at Shoreline, Leadbetter, and Chase Palm Parks for the control of squirrels. This exemption was granted but not used, because the squirrel population was successfully controlled through trapping.

| Green Parks | | |
|---|---|-----------------------------|
| ALAMEDA PARK | HALE PARK | PARQUÉ DE LOS NIÑOS |
| ALICE KECK PARK MEMORIAL GARDENS | HIDDEN VALLEY PARK | PILGRIM TERRACE |
| AMBASSADOR PARK | HILDA RAY PARK | PLAZA DEL MAR |
| ANDRÉE CLARK BIRD REFUGE | HONDA VALLEY | PLAZA VERA CRUZ |
| BOHNETT PARK | LA MESA PARK | RANCHERIA COMMUNITY GARDENS |
| CHASE PALM PARK | LAUREL CANYON | RATTLESNAKE CANYON |
| CITY HALL / DE LA GUERRA / STORKE PLACITA | LEADBETTER BEACH | SHORELINE PARK |
| DOUGLAS FAMILY PRESERVE | LOS ROBLES PARK | SKOFIELD PARK |
| EAST BEACH PARK | MESA LANE STEPS | STEVENS PARK |
| EASTSIDE NEIGHBORHOOD PARK | MORETON BAY FIG TREE | SUNFLOWER PARK |
| EQUESTRIAN CIRCLE | OAK PARK | THOUSAND STEPS |
| ESCONDIDO PARK | ORTEGA PARK | WEST BEACH |
| GOULD PARK / COLD SPRINGS TRAIL | PARMA PARK | WILLOWGLEN PARK |
| Parks with Yellow Zones | | |
| A.C. POSTEL MEMORIAL ROSE GARDEN | FRANCESCHI PARK LOWER | ORPET PARK |
| CABRILLO BALL PARK | HIDDEN VALLEY PARK OPEN SPACE | PERSHING PARK |
| DWIGHT MURPHY PARK | MAC KENZIE PARK | SAN ROQUÉ PARK |
| FRANCESCHI PARK | MISSION HISTORICAL PARK & A.C.P. ROSE GDN | SYLVAN PARK |

Parks Division Pesticide Use



| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------|------|------|------|------|------|------|-------|
| Green Pounds | 0 | 40 | 0 | 0 | 0 | 2.5 | 0 |
| Green Gallons | 11.7 | 0 | 10 | 1.9 | 0 | 13.5 | 0.15 |
| Yellow Pounds | 0 | 34 | 0 | 0 | 0 | 0 | 0 |
| Yellow Gallons | 5.7 | 4.2 | 8.8 | 6.4 | 9.2 | 14.6 | 24.05 |
| Red Pounds | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red Gallons | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Golf Division Pesticide Use

The Golf Division increased its material use from 13 units in 2012 to 29 units in 2013. Although there was an increase in Red materials from 8 units to 28 units, there was a decrease in Yellow materials from 3 units to 0.5 units and a decrease in Green Materials from 2 to 1. Due to a drier than normal winter, the Golf Division relied on a series of fungicide applications to control several outbreaks of Dollar Spot and Fusarium patch in the spring. Due to hot and humid summer, the Golf Division relied on a series of fungicide applications to control several outbreaks of Antracnose, Dollar Spot and Summer Patch on the greens. Some of these diseases stayed through the fall without any rain to leach the greens. There was an increase in turf diseases leading to an increase in Red materials used. However, the Golf Division continues to implement alternative agronomic methods to control diseases and limit pesticide use. Unfortunately, extreme environmental conditions created disease outbreaks that can only be controlled with fungicides

Alternatives Used

The Golf Division worked with County of Santa Barbara's Workforce Youth Program to give youths an opportunity to acquire hands on working skills that could help them in the future. The Golf Division received five youths who each worked 168 hours over the summer. The youths were certified on the use of weed eaters and edgers, and most of their hours were worked on weed eating around trees and fence lines. The Golf Division was able to reduce its use of Yellow materials. The Golf Division is looking forward to working with the youth program again this summer.

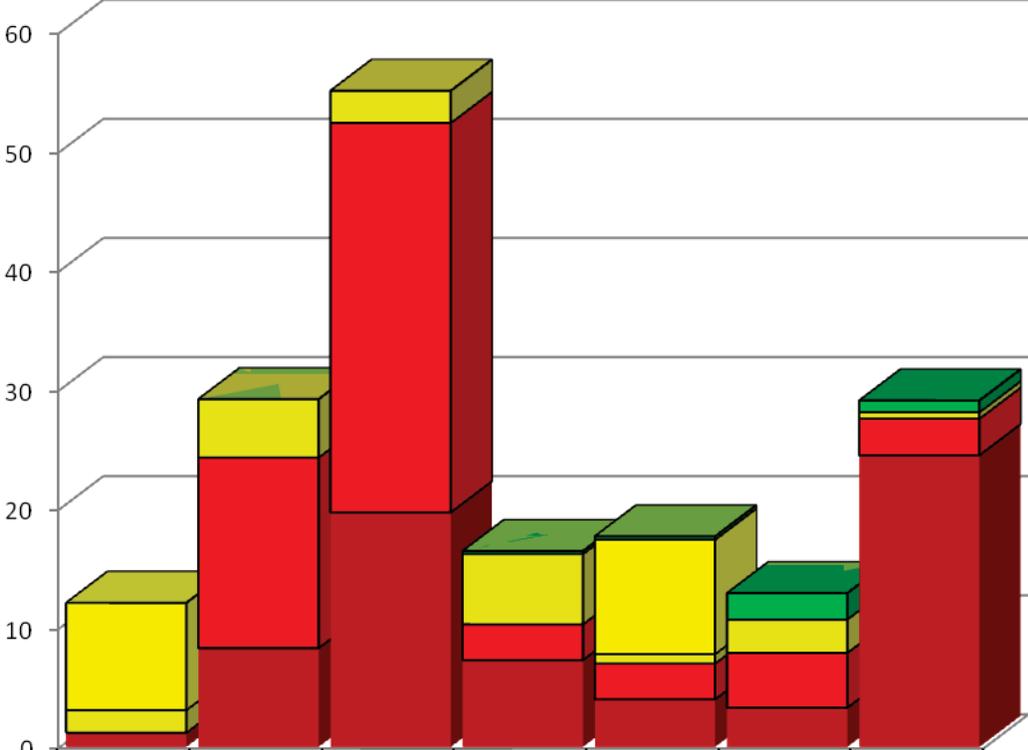
Green materials use decreased from 2 units to .37 units by double mowing more frequently. The Golf Division used the Green insecticide Acelepyryn for grub control on the greens.

The Golf Division continues to implement "Old World" agronomy to establish finer leaf turfgrasses. Areas of the putting surfaces that have been damaged from disease are routinely "spiked" and seeded with disease resistant bentgrass seed. These techniques coupled with the use of seaweed and compost tea help reduce the need for chemical inputs.

Exemptions

The Golf Division applied for and received ten exemptions. The exemptions were for the fungicides Banner-Maxx, Daconil, Heritage, Medallion, Prostar, and Affirm; the insecticide Acelepyryn and the herbicide/growth regulator Proxy, Primo Maxx and Trimmit. All of the exemptions targeted the diseases present on the greens. The exemptions for Prostar, Proxy, and Affirm were not used.

Golf Division Pesticide Use



| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------|------|------|------|------|------|------|------|
| Green Pounds | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Green Gallons | 0 | 0 | 0 | 0.25 | 0.28 | 2.21 | 0.99 |
| Yellow Pounds | 9 | 0 | 0 | 0 | 9.6 | 0 | 0 |
| Yellow Gallons | 1.9 | 4.9 | 2.7 | 5.9 | 0.8 | 2.8 | 0.53 |
| Red Pounds | 0 | 16 | 32.7 | 3 | 3 | 4.6 | 3.07 |
| Red Gallons | 1.2 | 8.3 | 19.7 | 7.3 | 4 | 3.3 | 24.5 |

Airport Department Pesticide Use

The Airport Department increased its pesticide use in 2013 with pesticide applications concentrated on mosquitoes and weeds. Green material usage increased from 346 units in 2012 to 2,049 units in 2013. Over the same time period, Yellow materials increased from 739 units to 1,124 units. Increases were due to increased need for mosquito control in the Goleta Slough. No Red materials were used in 2013.

Mosquitoes

During the spring of 2013, the mouth of the Goleta Slough closed due to the natural movement of sand. In prior years, the mouth of the Slough was opened mechanically by the County Flood Control District to facilitate drainage. As a result of the Slough mouth being closed, brackish waters impounded, creating a breeding ground for mosquitoes. The Airport Department made multiple applications of large quantities of both Green and Yellow materials to control mosquito populations. The Airport Department is currently developing a plan to secure permission to open the slough in future years.

In 2013, the Mosquito and Vector Management District applied 1,038 lbs of Altosid, 2,047 lbs of Vectobac G and Vectolex CG, and 2 lbs of Natular on the Airport's behalf, to control mosquitoes in the Goleta Slough.

Weeds

In addition to the extensive manual weed control program at the Airport, staff used the Yellow products Roundup ProMax and Surflan AS to maintain the airfield as needed for safe aircraft operations and to protect infrastructure. Herbicides were used to prevent weeds from obscuring airfield lights and signs, and to prevent weeds from deteriorating airfield assets. The Airport's landscape contractor also used Roundup ProMax to control weeds in the traffic islands on Hollister Avenue.

Rodents

Rodents on the airfield attract predators that pose a collision hazard for aircraft. Rodents also create a Federal Aviation Administration (FAA) compliance issue by undermining and creating uneven surfaces in runway safety areas. The Airport Department is required by the FAA to maintain safety areas in a smooth, compact condition. There was no chemical rodent control at the Airport in 2013, but an application of Fumitoxin will likely be needed in 2014 to address increasing populations of gophers. Rodents, including gophers, mice and rats outside the airfield fence were controlled using mechanical steel traps.

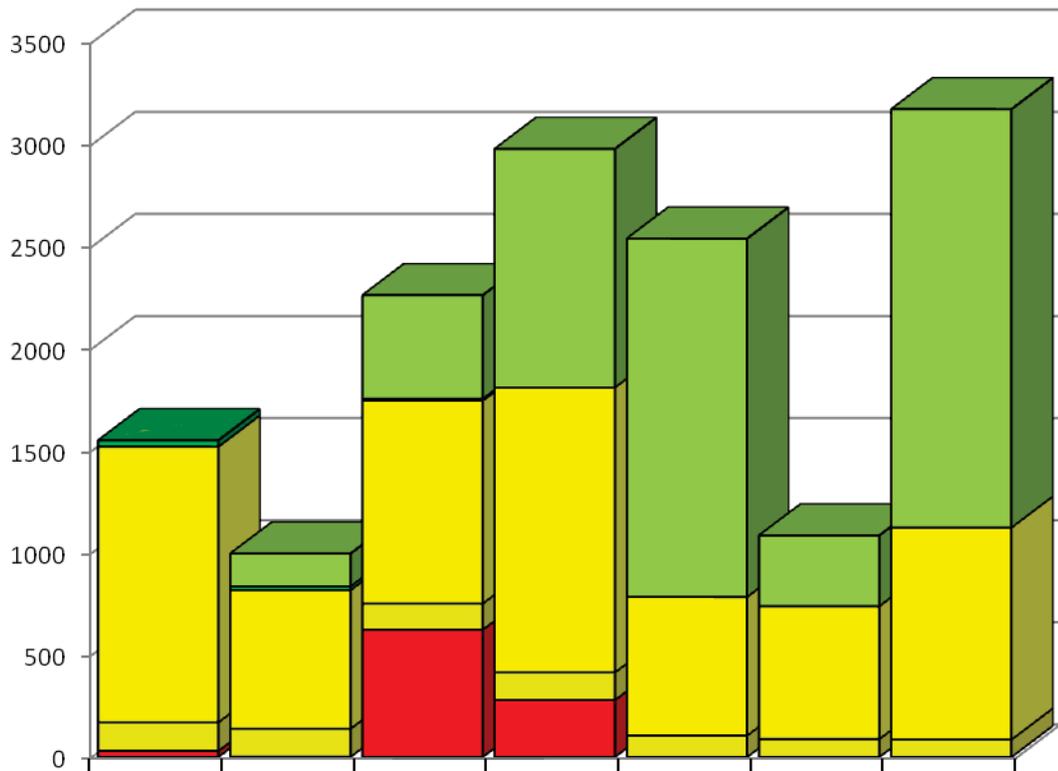
Alternatives Used

Alternative efforts focused on the control of weeds with 1,168 hours devoted to mechanical control. Airport staff and contract staff also devoted 117 hours to mechanical control of gophers, mice and rats.

Of the materials the Airport Department used for mosquito control, 33% were Green materials.

During the year the Airport Department used a beekeeper to remove multiple swarms of bees from the Airport. At no time during 2013 was the Airport Department forced to use pesticides to control bees.

Airport Pesticide Use



| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------|----------|-------|-------|----------|----------|-------|----------|
| Green Pounds | 0 | 160 | 507 | 1,168.90 | 1,755.10 | 346.3 | 2,049.07 |
| Green Gallons | 31.2 | 19 | 9.9 | 0 | 0 | 0 | 0 |
| Yellow Pounds | 1,349.90 | 678.6 | 993.4 | 1,395.20 | 678.8 | 650.6 | 1,038.40 |
| Yellow Gallons | 140 | 137.8 | 128 | 135.6 | 105.1 | 87.9 | 85.379 |
| Red Pounds | 30 | 0 | 623.6 | 278.9 | 0 | 0 | 0 |
| Red Gallons | 0 | 0.75 | 0 | 0 | 0 | 0 | 0 |

Public Works Department Pesticide Use

The Public Works Department is comprised of a number of Divisions. This report addresses pesticide use and IPM strategies for the Parking section of the Transportation Division, Vector Control, Streets section of the Transportation Division, and Facilities Maintenance Division.

The Public Works Department decreased its use of pesticides from 787 in 2012 to 299 in 2013. Green materials decreased from 757 units to 289 units. Yellow materials decreased from 23 units to 10 units. Red material use decreased from 7 to zero units.

Alternatives Used

The Downtown Parking section did not use any pesticides in 2013 and continued to use alternative methods for weed control including hand-weeding and weed whipping. Weed abatement continued to require a large amount of time and effort using non-chemical methods. Alternative practices for pest management included plant replacement, worm castings, and washing off insects with water pressure.

Vector Control utilized mechanical traps instead of rodenticide for rodent abatement. The program for 2013 consisted of 105 mechanical trap stations on State Street and 10 on Coast Village Road. The number of rodents caught by mechanical traps on State Street and Coast Village Road totaled 1,117. Alternative use hours for this effort totaled 278.

Vector Control used the Green material Vecto Bac G for the control of mosquitoes. With so little rain in 2013 there were fewer areas of pooled water and a lower water level in the Andrée Clark Bird Refuge. This resulted in the reduced use of mosquito control materials.

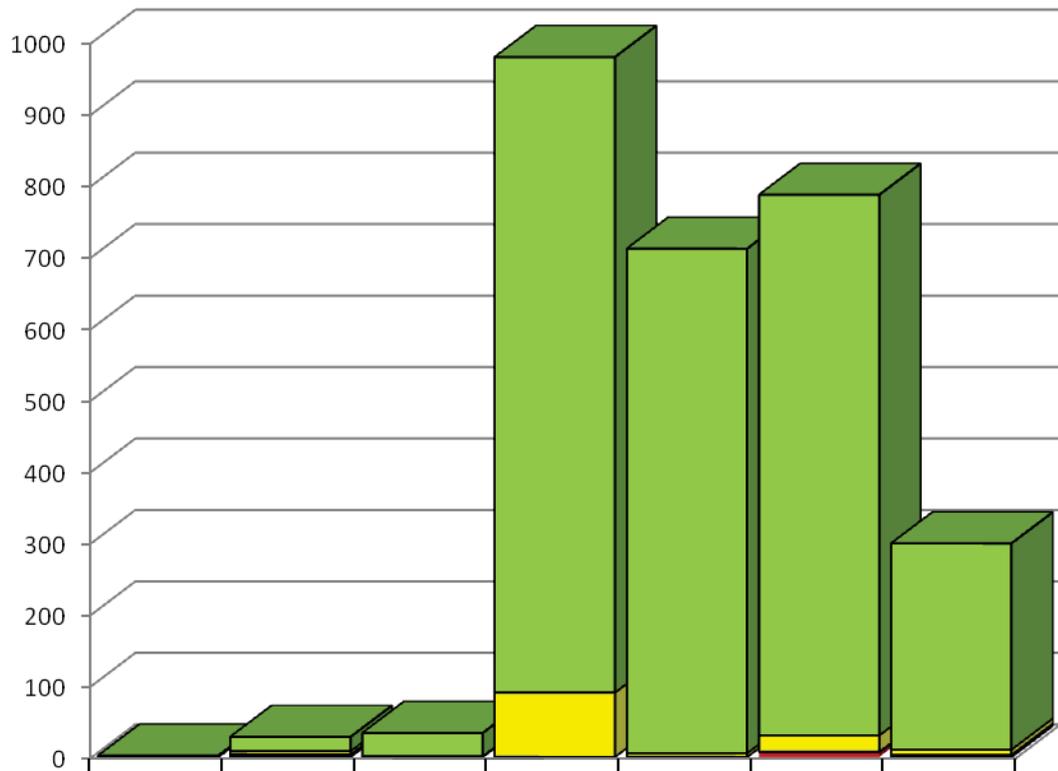
For bee abatement, a beekeeper is utilized. A total of 40 hives were relocated in 2013.

The Facilities Maintenance Division utilized mechanical traps instead of rodenticide for rodent abatement inside City facilities. The number of rodents caught by mechanical traps at City facilities was 1,116. Alternative use hours for this effort were 342.

Exemptions:

The Facilities Maintenance Division was granted six exemptions for 2013. Four were for the Yellow insecticides Advion, Arilon, Termidor, and Timbor for the control of ants and termites in buildings. These exemptions were used successfully. Two exemptions were for the Yellow herbicides Round-Up Pro Max and Surflan for the control of weeds in street medians. These exemptions were not used.

Public Works Pesticide Use



| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|----------------|------|------|------|-------|------|-------|--------|
| Green Pounds | 0.5 | 20 | 32.5 | 889.3 | 706 | 756.5 | 288.57 |
| Green Gallons | 0 | 0.01 | 0.1 | 0.1 | 0 | 0 | 0 |
| Yellow Pounds | 0 | 4.5 | 0 | 90 | 5.2 | 23 | 7.16 |
| Yellow Gallons | 1.4 | 3.4 | 1 | 0.065 | 0.09 | 0.13 | 3.13 |
| Red Pounds | 0 | 0.14 | 0 | 0 | 0 | 0 | 0 |
| Red Gallons | 0 | 0.08 | 0 | 0 | 0 | 7.1 | 0 |

V. EXEMPTIONS

Under the IPM Strategy and PHAER Zone system, exemptions may be granted when a pest outbreak poses an immediate threat to public health, employee safety, or will result in significant economic or environmental damage. Exemptions may be requested for one-time application or as a programmatic exemption for a single year. The exemption process is outlined in the IPM Strategy.

- Twenty-two exemptions were requested from the IPM Committee in 2013 as summarized in the table to the right and listed in the table below.
- Of the twenty-two requests approved, six were not implemented.

2013 Exemption Summary

| Exemptions | Creeks | Facilities | Golf | Parks | Streets | Totals |
|--------------------|--------|------------|------|-------|---------|--------|
| Emergency | | | | | | |
| Proposed | 2 | 4 | 10 | 4 | 2 | 22 |
| Passed | 2 | 4 | 10 | 4 | 2 | 22 |
| Denied | | | | | | |
| Applied | 2 | 4 | 7 | 3 | | 16 |
| Not Applied | | | 3 | 1 | 2 | 6 |

Exemption Detail Table

| Vote | Dept. / Div. | Material | Type | Type | Exemption Type | Used | Site |
|--------|--------------|------------------|-------------|------|----------------|------|--|
| Passed | Creeks | Round-Up Pro Max | Herbicide | | Programatic | Yes | Hidden Valley Open Space |
| Passed | Creeks | Polaris | Herbicide | | Programatic | Yes | Hidden Valley Open Space |
| Passed | Facilities | Termidor | Insecticide | | Programatic | Yes | Buildings |
| Passed | Facilities | Timbor | Insecticide | | Programatic | Yes | Buildings |
| Passed | Facilities | Advion | Insecticide | | Programatic | Yes | Buildings |
| Passed | Facilities | Arilon | Insecticide | | Programatic | Yes | Buildings |
| Passed | Golf | Heritage | Fungicide | | Programatic | Yes | Greens |
| Passed | Golf | Trimmit | Regulator | | Programatic | Yes | Greens |
| Passed | Golf | Primo Maxx | Regulator | | Programatic | Yes | Greens |
| Passed | Golf | Acelepryn | Fungicide | | Programatic | Yes | Greens |
| Passed | Golf | Medallion | Fungicide | | Programatic | Yes | Greens |
| Passed | Golf | Daconil | Fungicide | | Programatic | Yes | Greens |
| Passed | Golf | Affirm | Fungicide | | Programatic | No | Greens |
| Passed | Golf | Banner-Maxx | Fungicide | | Programatic | Yes | Greens |
| Passed | Golf | Prostar | Fungicide | | Programatic | No | Greens |
| Passed | Golf | Proxy | Regulator | | Programatic | No | Greens |
| Passed | Parks | Round-Up Pro Max | Herbicide | | Programatic | Yes | Parma Park |
| Passed | Parks | Round-Up Custom | Herbicide | | Programatic | Yes | Parma Park |
| Passed | Parks | Round-Up Pro Max | Herbicide | | Programatic | Yes | Parma Park |
| Passed | Parks | Diphacinone | Rodenticide | | Programatic | No | Shoreline, Leadbetter, Chase Palm, MacKenzie Parks |
| Passed | Streets | Round-Up Pro Max | Herbicide | | Programatic | No | Medians |
| Passed | Streets | Surflan | Herbicide | | Programatic | No | Medians |

Comparison of Exemptions for 2012 and 2013

| | 2012 | 2013 |
|---|------|------|
| Number of Exemption Requests | 15 | 22 |
| Number of Exemption Requests Approved | 15 | 22 |
| Number of Approved Exemption Requests Applied | 10 | 16 |
| Number of Approved Exemption Requests Not Applied | 5 | 6 |

VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2013

Non-chemical pest management alternatives used in 2013 are reviewed in the table below. The use of non-chemical IPM alternatives was emphasized over pesticide applications. Hours reported for the total year are from the *Monthly Alternative Use Reports* prepared by each Department. A check (✓) indicates the alternative was used, but time was not tracked for it. The total tracked hours for City-wide alternative practices increased from 9,713 in 2012 to 10,485 in 2013.

| PEST | Alternative | Airport | Golf | Public Works | Parks | Citywide Hours |
|--------------------|---------------------------|----------------|------------|--------------|--------------|----------------|
| WEEDS | Mulch & wood chips | ✓ | ✓ | ✓ | 342 | 342 |
| | Weed fabric | | | | ✓ | 0 |
| | Propane flame weeder | | | | ✓ | 0 |
| | Hand weeding | | 640 | 181 | 2,154 | 2,975 |
| | Weed whip | 1,168 | ✓ | | 3,990 | 5,158 |
| | Habitat modification | | | | ✓ | 0 |
| | Irrigation Mgmt. | ✓ | ✓ | ✓ | ✓ | 0 |
| | Sod Cutting | | | | 320 | 320 |
| PLANT PESTS | Irrigation Mgmt. | ✓ | ✓ | ✓ | ✓ | 0 |
| | Compost tea/microbial in. | | ✓ | | | 0 |
| | Enhance plant health | | ✓ | | ✓ | 0 |
| | Worm castings | | | | ✓ | 0 |
| | Effective micro-organisms | | ✓ | | | 0 |
| | Wash off plants | | | | ✓ | 0 |
| | Remove plant/tree | | | | ✓ | 0 |
| GOPHERS | Traps | 95 | ✓ | ✓ | 650 | 745 |
| SQUIRRELS | Traps | | ✓ | | 121 | 121 |
| RATS & MICE | Mechanical traps | 22 | | 620 | ✓ | 642 |
| | Cat | | | | ✓ | 0 |
| MOSQUITOES | Mosquito fish | | | | ✓ | 0 |
| | Remove stagnant water | | | | ✓ | 0 |
| BEES | Bee Keepers | | | 165 | ✓ | 165 |
| OTHER | Glue traps/roaches | | | 18 | | 18 |
| | Heat Treatment | | | ✓ | | 0 |
| Total Hours | | 1,284.5 | 640 | 983.5 | 7,577 | 10,485 |

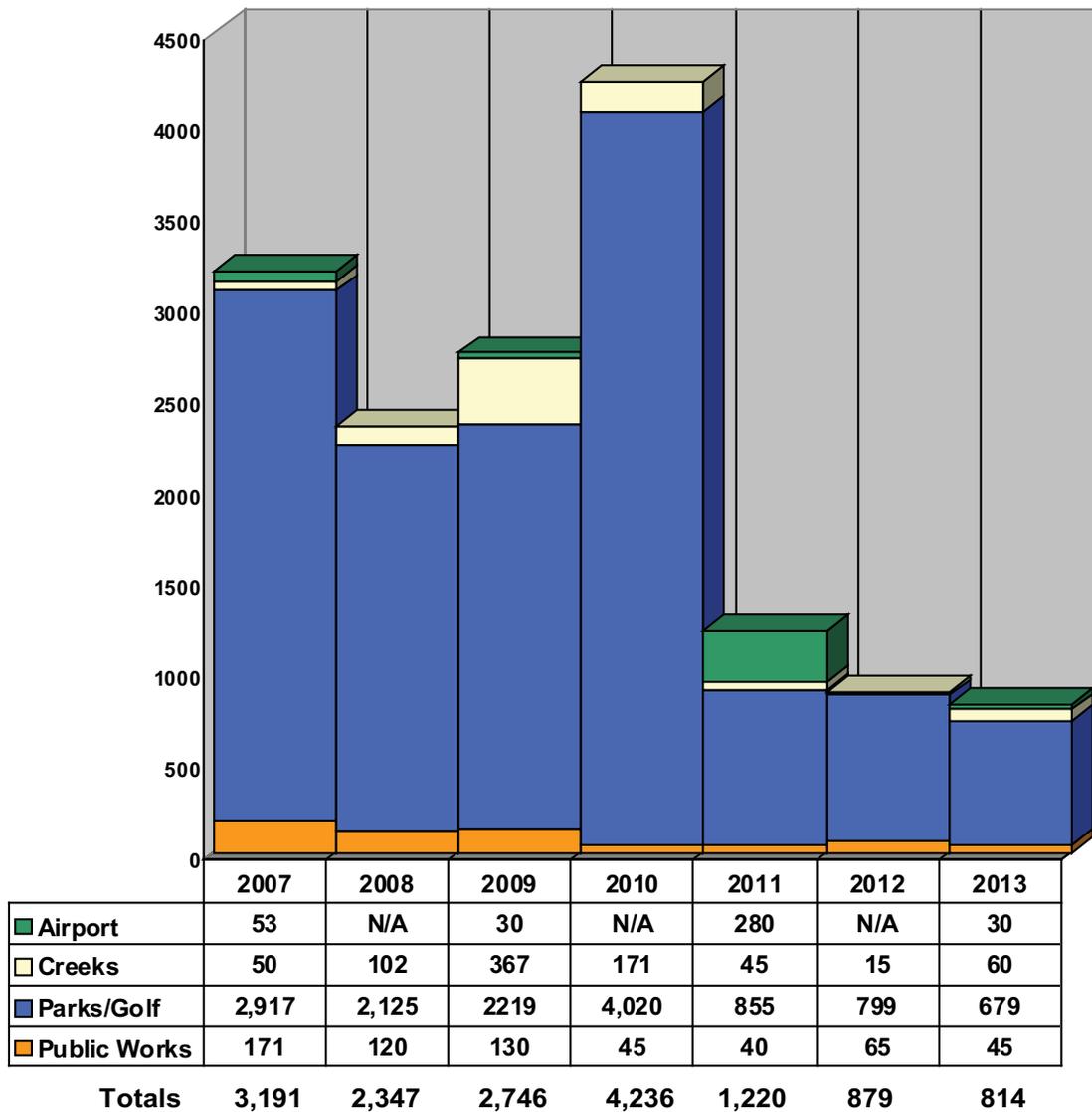
Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2013.

Mulch Use Table

| Yards of Mulch by Type | Creeks | Parks/Golf | Public Works | City Totals |
|------------------------|-----------|------------|--------------|-------------|
| Biosolids | | 70 | | 70 |
| Woodchips | 60 | 609 | 45 | 714 |
| Total Yards | 60 | 679 | 45 | 784 |

Mulch Use Comparison Chart



VII. EFFECTIVENESS OF ALTERNATIVE PRACTICES IMPLEMENTED

In general, most alternative pest management practices are more labor intensive and costly, and not as effective as the use of Yellow and Red classified pesticides. However, there are occasions when a Yellow or Red material is also not effective in controlling a pest problem. While most Green materials and practices provide only moderate control of pest populations, there have been some successes. The effectiveness of alternatives for the biggest pest problems encountered is reviewed below.

- **Weeds:** A variety of alternatives are used to provide moderate effectiveness and control including: weeding, weed whipping, mulching, mowing, and a flame torch in designated safe areas. These alternatives are significantly more labor and cost intensive and not as effective as Yellow materials. Alternative food grade or EPA exempt chemicals, such as clove oil or acid based herbicides, have not proven effective. This has resulted in a notable increase in weed populations, predominantly on parkland, that continues to have a negative effect on aesthetics and landscape health.
- **Insects / Mollusks:** Results are mixed for combating insects and mollusks. For some insects, there are no known effective alternatives. Some alternatives can be very effective but expensive, such as removing non-resistant plants and replacing them with resistant varieties. However, the following alternatives have proven successful against insects and mollusks:
 - Sluggo for snails and slugs
 - Worm castings for white fly
 - Insecticidal soap for aphids
 - Neem oil as a dormant spray
 - Bti for mosquitoes
 - Acelepryn for beetles
- **Disease:** No effective alternative has been found for most diseases. Where possible, staff focuses on preventative treatments to enhance plant health. Once disease strikes, a plant may be removed and replaced with a less susceptible plant. If a plant cannot be removed, pesticides are generally required to combat the disease.
- **Gophers:** For the most part, mechanical traps are being used City-wide. Traps have been found to be moderately effective and are more expensive than rodenticides due to higher costs of purchasing, installing, monitoring, and cleaning out traps.
- **Ground Squirrels:** Mechanical trapping, using snap traps, is the primary method of control at this time. This method is moderately effective at controlling populations. Both trapping and baiting have proven very labor intensive.
- **Mice / Rats:** At this time, traps are the primary way of controlling this population. Traps have been found to be effective depending on population size and location and available food sources. Positive public perception seems to far outweigh the costs of using traps. Traps have also shown themselves to be very effective in controlling rodents on downtown State Street and at Coast Village Road.
- **Termites:** Building Maintenance now uses heat treatments to control drywood termites where appropriate. Heat was found to be equally effective as pesticides on smaller buildings with drywood termites. However, costs are 50% higher at this time, and heat is not effective on large structures or with subterranean termites.

VIII. PROPOSED CHANGES TO PEST MANAGEMENT PRACTICES

Alternative Practices Proposed for 2013

The upcoming year will pose similar challenges due to budgetary limitations, dry weather, and limited options for effective Green materials. This could lead to the need to use more traditional pest management practices. Departments will continue to seek “least toxic” alternatives that provide higher benefit to cost ratios. Departments will also continue to use alternatives found effective in the past ten years unless more cost-effective alternatives are found. Departments propose the following for 2013:

- The Parks Division will continue to implement the PHAER Zone system of Integrated Pest Management and continue seeking out training and collaborative opportunities with other agencies and IPM professionals. Parks will continue experimenting with sheet mulching to control weeds.
- The Golf Division will continue to experiment with new Green materials as they come forward.
- In the coming year, the Airport Department will again seek exemptions for fumitoxin to control rodents on the airfield, and a product to treat drywood termites in Airport buildings. In addition, the Airport Department may request an exemption for application of Roundup, in a PHAER green zone, to remove existing turf as part of a project to install drought tolerant landscape. Alternative effort hours are expected to remain static.

IX. CONCLUSION

Overall, the City increased its use of pesticides in 2013. There was an increase in Green materials of 109%, due primarily to mosquito control at the Airport. An increase in Green materials, while adding to the overall pesticide use City-wide, is generally a desirable trend as it shows the selection of Green materials over Yellow or Red materials. There was an increase in Yellow materials of 48%. Red materials rose by 85% primarily due to an unusually warm year, prompting fungus outbreaks at the Golf Course.

It will continue to be important for City staff to find cost effective, low risk, viable alternatives so that pesticide hazards may be reduced further and the overall efficiency of IPM practices may increase. Additionally, changes in maintenance standards and expectations will remain without either increased resources or more effective least toxic materials.

Also critical to reducing pesticide hazards in the City of Santa Barbara is the continuation of community outreach and public education. Because of this community outreach, the public will become more aware of the City's greater reliance upon low risk IPM alternatives.

X. ATTACHMENTS

ATTACHMENT A: APPROVED MATERIALS LIST

The pesticides listed on the Approved Materials List are categorized according to the pesticide screening protocol in the PHAER Zone system.

| Product Name | Active Ingredient | ZONE | Type |
|----------------------------------|----------------------------------|--------|------------------|
| Acelepryn | Chlorantraniliprole | Green | Insecticide |
| Advance Ant Bait | Orthoboric Acid | Green | Insecticide |
| Advion Roach Stations (enclosed) | Indoxacarb | Green* | Insecticide |
| AllDown | citric acid, acetic acid, garlic | Green | Herbicide |
| <i>Any brand name</i> | Orthoboric Acid ant bait station | Green | Insecticide |
| Avert Cockroach Bait Station | Abamectin B1 0.05% | Green | Insecticide |
| Avert Cockroach Gel Bait | Abamectin B1 0.05% | Green | Insecticide |
| Bactimos Pellets | Bt | Green | Insecticide |
| Bactimos Wettable | Bt | Green | Insecticide |
| Bio-Weed | corn gluten | Green | Herbicide |
| Borid Turbo | Orthoboric Acid | Green | Insecticide |
| BurnOut 2 | clove oil | Green | Herbicide |
| Cease Biofungicide | B. subtilis | Green | Fungicide |
| Cinnamite | cinnamaldehyde | Green | Insect/Fung |
| Conserve | spinosad | Green | Insecticide |
| Dipel Flowable | Bt | Green | Insecticide |
| Drax Ant Kill PF | Orthoboric Acid | Green | Insecticide |
| EcoExempt | Wintergreen Oil | Green | Herbicide |
| EcoExempt D | 2-Phenethyl propionate / Euginol | Green | Insecticide |
| Embark | mefluidide | Green | Growth Regulator |
| GreenErgy | Citric, Acetic Acid | Green | Herbicide |
| Kaligreen | potassium bicarbonate | Green | Fungicide |
| Matran (EPA Registration Exempt) | clove oil | Green | Herbicide |
| Natura Weed-A-Tak | clove oil | Green | Herbicide |
| Niban | Isoboric Acid 5% | Green | Insecticide |
| Safer Soap | potassium salts of fatty acids | Green | Insecticide |
| Sluggo | iron phosphate | Green | Other |
| Summit BTI Briquets | Bt | Green | Insecticide |
| Teknar HP-D | Bti | Green | Insecticide |
| Terro II | Orthoboric Acid | Green | Insecticide |
| Vectobac G | Btk | Green | Insecticide |
| VectoLex CG | bacillus sphaericus | Green | Insecticide |
| Victor Wasp and Hornet Killer | Mint Oil 8% & Sodium Lauryl | Green | Insecticide |

| Product Name | Active Ingredient | ZONE | Type |
|----------------------------|--------------------------------|--------|-----------------------|
| | Sulfate 1% | | |
| Advion Ant Arena | Indoxacarb | Yellow | Insecticide |
| Advion Roach Gel | Indoxacarb | Yellow | Insecticide |
| Advion Insect Granules | Indoxacarb | Yellow | Insecticide |
| Agnique MMF | POE Isoocatadecanol | Yellow | Insecticide |
| Aliette | fosetyl aluminum | Yellow | Fungicide |
| Altosid Briquettes | methoprene | Yellow | Other |
| Altosid Liquid | methoprene | Yellow | Other |
| Altosid Pellets | methoprene | Yellow | Other |
| Altosid XR-B | methoprene | Yellow | Other |
| Aquamaster-Rodeo | glyphosate | Yellow | Herbicide |
| Avid | abamectin | Yellow | Miticide/Insecticide |
| Ditrac | Diphacinone | Yellow | Rodenticide |
| Dormant | petroleum oil | Yellow | Insecticide |
| Green Light | Neem oil | Yellow | Insecticide/Fungicide |
| Kop-R-Spray | Copper Oil | Yellow | Fungicide |
| M-PEDE | potassium salts of fatty acids | Yellow | Insecticide |
| Omni Oil | Mineral Oil | Yellow | Fungicide |
| Prostar 70 WP | flutolanil | Yellow | Fungicide |
| Rose Defense | Neem oil | Yellow | Insect/Fung |
| Roundup Pro | glyphosate | Yellow | Herbicide |
| Roundup PROMAX | glyphosate | Yellow | Herbicide |
| Safticide Oil | petroleum oil | Yellow | Insecticide |
| Stylet Oil | Petroleum distillates | Yellow | Insecticide |
| Sulf-R-Spray | Parafin oil, sulfur | Yellow | Fungicide |
| Superior Spray Oil | petroleum distillates | Yellow | Insecticide |
| Surflan | oryzalin | Yellow | Herbicide |
| Surflan AS | oryzalin | Yellow | Herbicide |
| Termidor SC | Fipronil | Yellow | Insecticide |
| Triact | Neem oil | Yellow | Insecticide/Fungicide |
| Trilogy | Neem oil | Yellow | Insecticide/Fungicide |
| Wasp-Freeze | allethrin | Yellow | Insecticide |
| Wilco Ground Squirrel Bait | diphacinone | Yellow | Other |
| XL 2G | benefin; oryzalin | Yellow | Herbicide |
| Banner-maxx | Propiconazole | S.C. | Fungicide |
| Bayleton | triadimafon triazole | S. C. | Fungicide |
| Daconil | Chlorothalonil | S.C. | Fungicide |
| Fumitoxin | Aluminum phosphide | S. C. | Rodenticide |
| Heritage | Azoxystrobin | S.C. | Fungicide |
| Manage | halosulfuron methyl | S. C. | Herbicide |
| Medallion | fludioxonil | S. C. | Fungicide |

| Product Name | Active Ingredient | ZONE | Type |
|--------------|-------------------|-------|------------------|
| Quick Pro | glyphosate/diquat | S. C. | Herbicide |
| Reward | diquat dibromide | S. C. | Herbicide |
| Rubigan | fenarimol | S. C. | Fungicide |
| Rubigan EC | fenarimol | S. C. | Fungicide |
| Subdue | metalaxyl | S. C. | Fungicide |
| Trimmit 2SC | Paclobutrazol | S.C. | Growth Regulator |
| Zp Rode | zinc phosphide | S. C. | Rodenticide |

* By decision of the Citizen IPM Advisory Committee, chemicals that may be classified normally as Yellow materials may be classified as Green materials if they are entirely enclosed in factory sealed bait stations.