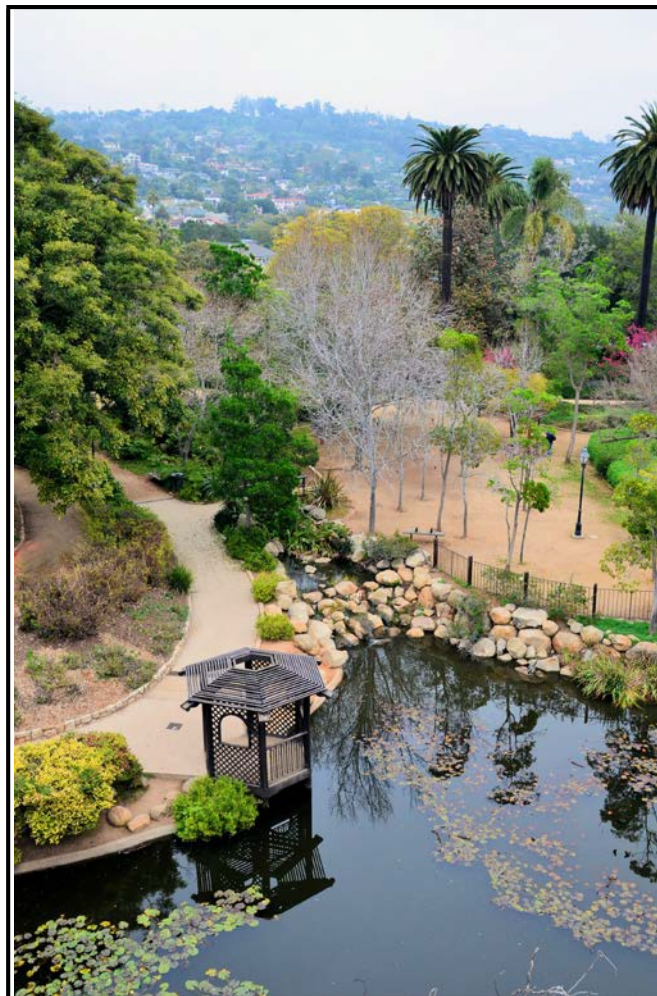




**City of Santa Barbara
Integrated Pest Management Strategy**

DRAFT 2012 Annual Report

Prepared March 2013



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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 requires that an Annual Report be prepared. The 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

In addition to the areas described above, the 2012 Annual Report discusses the Pesticide Hazard And Exposure Reduction (PHAER) Zone System adopted by the City Council in February 2006. This is the ninth Annual Report for the program.

PHAER Zone System

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.

Citizen and Staff IPM Advisory Committees

City Council established the Citizen IPM Advisory Committee by Resolution No. 06-008. The members of the Committee 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 2012, the Citizen IPM Advisory Committee met three times to discuss and act on IPM policies and practices. The 2012 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
- Christina McGinnis, Environmental Defense Center

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 were: 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 three times in 2012, reviewing 15 requests for exemptions, consulting with staff on current pest issues and applicable IPM practices, and approving the 2011 IPM Report.

In 2012, there were no IPM Advisory Committee dissensions. A dissension is when a vote is not unanimous.

II. 2012 PROGRAM SUMMARY

The use of Green materials decreased from 2,461.4 units in 2011 to 1,121 units in 2012. The use of Yellow materials decreased from 808.9 units to 779.2 units. The use of Red materials increased from 7.06 units to 15 units. Overall pesticide use decreased from 3,277.3 units to 1,915.2 units. The majority of the overall decrease is due to lower than average rainfall, requiring less mosquito control. The control of mosquitoes accounted for 89% of all the pesticide units used City-wide in 2012.

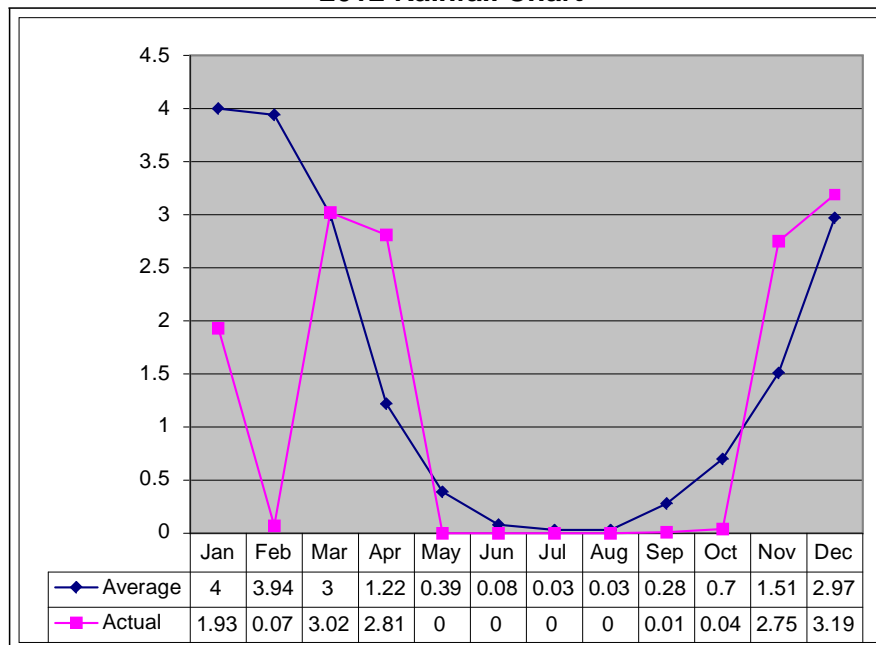
The table below is a summary of pesticide use for 2012, including any increase or decrease in material use from 2011. It is important to note that because pesticide use will vary from year to year, an increase or decrease from the previous year does not necessarily indicate a long-term trend. Many factors affect the amount of pesticides applied in any one year.

Department / Division	Material Use				Change from 2011
	Green	Yellow	Red	Total	
Airport Department	346.34	738.51	0	1084.8	57% Decrease
Golf Division	2.21	2.84	7.9	12.95	27% Decrease
Parks Division	16	14.675	0	30.675	232% Increase
Public Works Department	756.5	23.13	7.1	786.73	11% Increase
City-Wide Total	1121.1	779.15	15	1915.2	42% Decrease

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 2012 calendar year. The total rainfall was 13.82 inches, substantially less than the 2011 rainfall of 19.6 inches. Reduced rain, especially in spring, reduces the mosquito breeding cycle and the need for pesticides used in mosquito control.

2012 Rainfall Chart



III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2012 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, and a graph depicting pesticide use.

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 tenth 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 decreased in 2012, mainly because of the reduced use of materials to manage mosquito populations throughout the City. Pesticides applied decreased from 3,277.3 units in 2011 to 1,915.2 in 2012. The use of Green materials decreased from 2,461.4 units to 1,121 units. The use of Yellow materials decreased from 808.9 units to 779.1 units, and Red materials increased from 7.06 units to 15 units. The control of mosquitoes accounted for 89% of all the pesticide units used City-wide in 2012.

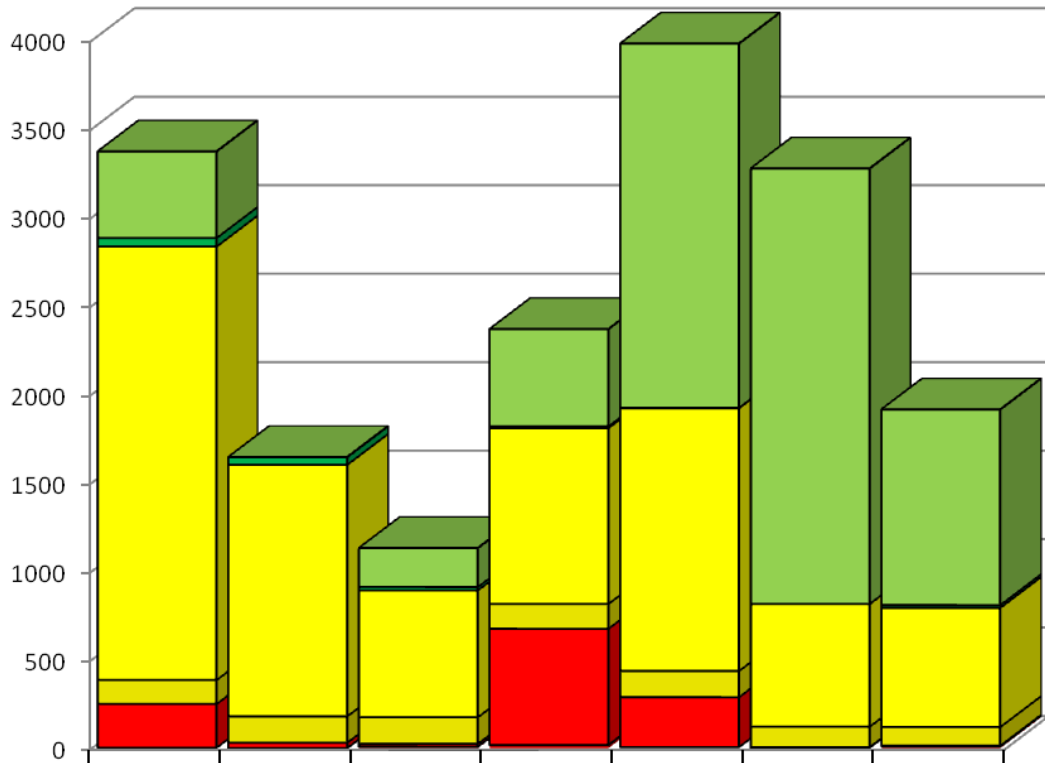
The table below provides a summary of the pesticides applied on City property in 2012. Pesticides are reported in either pounds or gallons depending on whether they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and 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

Pesticide Name	Active Ingredient	Type	Amount of Pesticide Applied														
			Airport		Golf		Parks and Recreation		Public Works		Airport		Parks and Recreation		Public Works		
			Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Applications	Applications	Applications	Applications	
Acelepryn	Chlorantraniliprole	Insecticide			0.25										1		
All-Down	Acetic & Citric Acids	Herbicide					8									2	
Matran	Clove Oil	Herbicide					5.5									5	
Milstop	Potassium bicarbonate	Fungicide						2.5								1	
Natular	Spinosad	Larvicide		0.44							2.5	1					1
Primo Maxx	Trinexapac-ethyl	Regulator			1.96									18			
Vectobac G	Bti	Insecticide		345.9							400	28					30
VectoLex CG	B. sphaericus	Insecticide									354	2					3
Green Totals			0	346.34	2.21	0	13.5	2.5	0	756.5	31	19	8	34			
Advion Gel	Indoxacarb	Insecticide	0.009						0.1		4						5
Advion Granuals	Indoxacarb	Insecticide								23							7
Altosid XR-B	Methoprene	Insecticide		602.60							5						
Aquamaster	Glyphosate	Herbicide					7.875										4
Rose Defense	Neem Oil	Insecticide					2.1										3
Round-up PROMAX	Glyphosate	Herbicide	42.9		2.34		2.7					12	4				20
Surflan	Oryzalin	Herbicide	45								3						
Termidor SC	Fipronil	Insecticide							0.03								5
Trimmit 2SC	Paclobutrazol	Regulator			0.5								5				
Wasp Freeze	Alethrin	Insecticide					2										15
Wilco Squirrel Bait	Diphacinone	Rodenticide		48								4					
Yellow Totals			87.909	650.6	2.84	0	14.675	0	0.13	23	28	9	42	17			
Banner-maxx	Propiconazole	Fungicide			0.37										1		
Daconil	Chlorothalonil	Fungicide			2.93										2		
Heritage	Azoxystrobin	Fungicide				1									1		
Medallion	Fludioxonil	Fungicide				3.6									2		
Vikane	Sulfuryl fluoride	Insecticide							7.1								1
Red Totals			0	0	3.3	4.6	0	0	7.1	0	0	6	0	1			
Department Totals			87.909	996.94	8.35	4.6	28.175	2.5	7.23	779.5	59	34	50	52			
City-wide Totals:			Gallons 131.664		Pounds 1,783.540				Applications 195								

City-wide Pesticide Use



	2006	2007	2008	2009	2010	2011	2012
Green Pounds	489	0.5	220	549.5	2058.2	2461.1	1105.3
Green Gallons	48.5	42.9	19	10	2.2	0.28	15.7
Yellow Pounds	2449.9	1421.9	717.1	993.4	1485.3	693.6	673.6
Yellow Gallons	135.6	149	150.4	140.5	148.1	115.2	105.5
Red Pounds	246.9	30.5	16.2	656.3	281.9	3	4.6
Red Gallons	3.7	1.2	9.2	19.7	7.3	4	10.4

Parks Division Pesticide Use

Pesticide use by the Parks Division increased in 2012. The use of Green materials increased from zero units to 16 units as Parks experimented with Green materials for weed control, with little success. There was an increase in Yellow materials from 9.2 units to 14.6 units due to increased weed control, especially on street islands, and control of invasives in open space areas. No Red materials were used this year on any parkland.

Alternatives Used

The Parks Division performed 3,586 hours of alternative pest management. The Parks Division used a weed flamer on sidewalk cracks and rocky areas as well as applying 799 yards of mulch and 22 yards of biosolids in planter areas and turf. As in years past, the majority of alternative hours were in hand- weeding and hoeing, and mechanical weeding with power equipment. Weed levels continue to compound over time, causing a significant reduction in the aesthetics of many of our prime park sites.

Various other alternatives were practiced in 2012, 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.

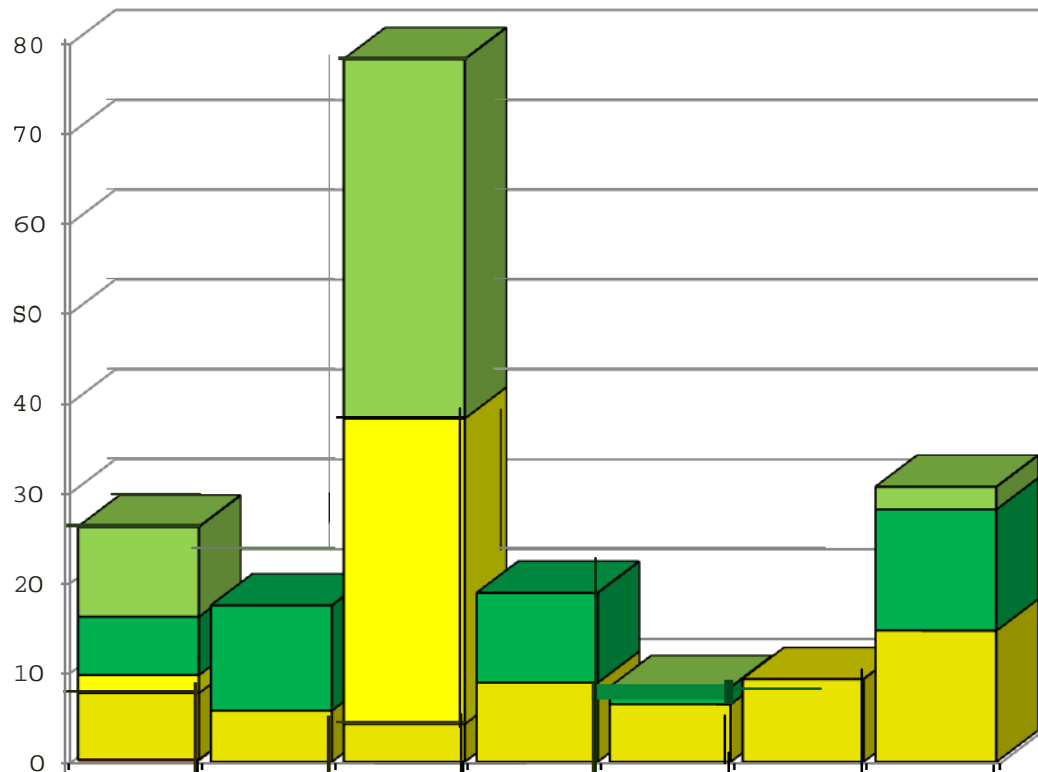
This year continued to see historic levels of gopher activity in the park system. The Parks Division has significantly increased gopher trapping activities to try and minimize damage to the turf and planter areas that are affected.

A project of note for 2012 was the reduction in tule coverage at the Andrée Clark Bird Refuge. This project reduced suitable breeding areas for mosquitos and significantly reduced the need for treatment. Vector Control manages mosquito populations in the Bird Refuge by applying Green materials at the mosquito breeding areas. The substantial tule growth sheltered many of the areas, making application difficult. Removal of some of the denser areas of tules has made control more efficient. In 2011, 94% of all the pesticide units applied City-wide were for mosquito control. In 2012, the number has been reduced to 89%.

Exemptions

The Parks Division applied for two exemptions. The first exemption request was for the use of Glyphosate at Parma Park to eradicate invasive onion weed. This exemption was granted and used successfully. The second exemption was for the use of Diphacinone at Shoreline, Leadbetter, and Chase Palm Parks for the control of squirrels. This exemption was granted but was not used due to the squirrel population not increasing beyond our trapping abilities.

Parks Division Pesticide Use



	2006	2007	2008	2009	2010	2011	2012
○ Green Pounds	10	0	40	0	0	0	2.5
● Green Gallons	6.5	11.7	0	10	19	0	13.5
○ Yellow Pounds	2	0	34	0	0	0	0
○ Yellow Gallons	7.4	5.7	4.2	8.8	6.4	9.2	14.6
● Red Pounds	0	0	0	0	0	0	0
● Red Gallons	0.25	0	0	0	0	0	0

Golf Division Pesticide Use

The Golf Division decreased its material use from 17.7 units in 2011 to 12.95 units in 2012. Although there was a decrease in Yellow materials from 10.4 units to 2.8 units, there was a slight increase in Red materials from 7 units to 7.9 units. The use of Green materials also increased from .28 in 2011 to 2.2 in 2012. Due to a mild and humid summer, the golf course relied on a series of fungicide applications to control several outbreaks of Anthracnose on the greens. The disease pressure is still strong, but the outbreaks are confined to smaller areas on the greens and don't require as much fungicide when compared to previous years. Nearly all other turf diseases are no longer an issue on the greens at the golf course due to the dominant populations of disease tolerant grass varieties.

Alternatives Used

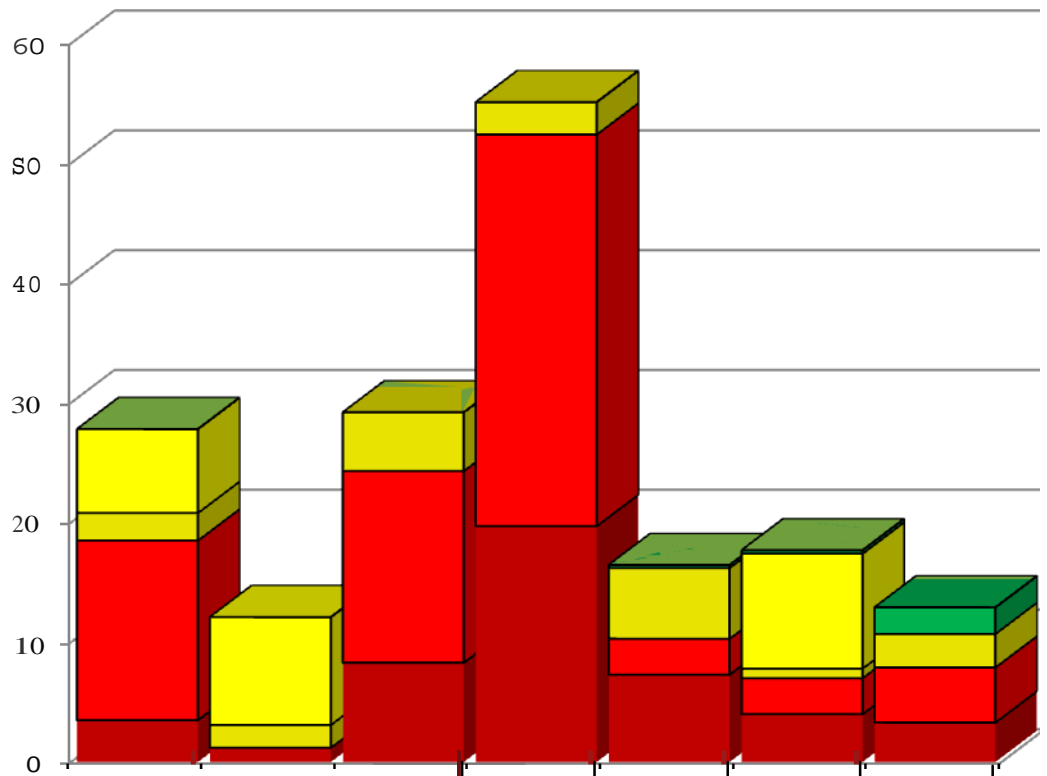
The Golf Division continues to use the Green insecticide Acelepryn successfully for Black Turfgrass Ataenius grub control on the greens.

The Golf Division continues to interseed and promote finer leaved, more disease tolerant turfgrass on the greens. This approach has led to an increase in bentgrass populations which require less fertilizer, chemicals and irrigation. To help assist the plant during periods of stress the Golf Division is also using seaweed extract and beneficial microorganisms which helps in the decomposition of thatch.

Exemptions

The Golf Division applied for and received ten exemptions. The exemptions were for the fungicides Banner-Maxx, Daconil, Heritage, Medallion, Merit, Prostar and Affirm; the insecticide Acelepryn and the growth regulators Primo Maxx and Trimmit. All of the exemptions targeted the greens. The exemptions for Banner-Maxx, Daconil, Heritage, Medallion, Acelepryn, Primo Maxx and Trimmit were used successfully. The exemptions for Prostar, Merit, and Affirm were not used.

Golf Division Pesticide Use



	2006	2007	2008	2009	2010	2011	2012
○ Green Pounds	0	0	0	0	0	0	0
● Green Gallons	0	0	0	0	0.25	0.28	2.21
○ Yellow Pounds	7	9	0	0	0	9.6	0
○ Yellow Gallons	2.3	1.9	4.9	2.7	5.9	0.8	2.8
● Red Pounds	15	0	16	32.7	3	3	4.6
● Red Gallons	3.5	1.2	8.3	19.7	7.3	4	3.3

Airport Department Pesticide Use

The Airport Department decreased their pesticide usage in 2012. Green material usage decreased from 1,755.1 units in 2011 to 346.3 units in 2012. Yellow materials decreased from 783.9 units to 738.5 units. Both decreases were due in part to a reduced need for mosquito treatments. No Red materials were used in 2012. Like in years past, the Airport Department pesticide applications concentrated on three types of pests in 2012: mosquitoes, rodents and weeds. In addition to the usual pests, the Airport Department also used Advion bait stations to control ants in 2012. Ants are a problem in several Airport facilities.

Mosquitoes

The Airport Department relies primarily on Altosid XR, a Yellow extended release larvicide to control mosquito sources in the Goleta Slough. The product is effective for up to 180 days. In wet years, a second application of Altosid XR is needed. In 2012, only one application was needed. The Mosquito and Vector Management District who implements mosquito control efforts on the Airport's behalf, also rely heavily on green, BTI based products like Vectobac G to control smaller residual mosquito sources. BTI based products are only effective for about 10 days.

In 2012 the Mosquito and Vector Management District applied 602.6 lbs Altosid, 345.9 lbs of Vectobac G, and .44 lbs of Natular on the Airport's behalf, to control mosquito sources 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 to maintain the airfield as needed for safe aircraft operations and to preserve 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 used Roundup PROMAX to control weeds in the traffic islands on Hollister Avenue.

Rodents

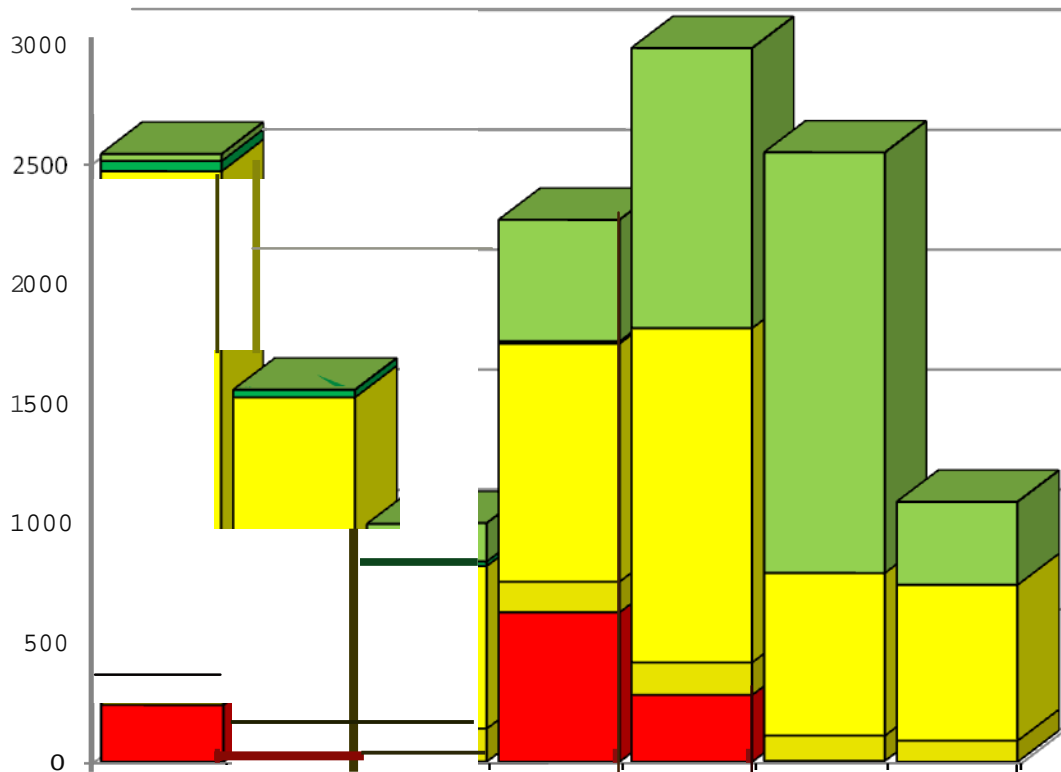
Rodents on the airfield attract predators that pose a collision hazard for aircraft. Rodents also create an FAA compliance issue by undermining and creating uneven surfaces in runway safety areas. The Airport Department is required by the FAA to maintain safety areas in a smooth, compact condition. On-going rodent control is necessary to maintain a safe environment for aircraft operations. In 2012, Airport applied Wilco, a Yellow diphacinone based bait, to control ground squirrels. Gophers outside the airfield fence were controlled using mechanical steel traps.

Alternatives Used

Alternative efforts focused on the control of weeds through mechanical methods, including weed whipping, hand weeding and hoeing. 4,279 hours were devoted to mechanical weed control in 2012. Airport staff also devoted 72 hours to mechanical control of gophers and mice.

During the year the Airport Department used a beekeeper to remove multiple swarms of bees from the Airport. At no time during 2012 was the Airport Department forced to use pesticides to control bees, however periodically the Department may be forced to use chemical control in situations where the location of a bee swarm conflicts with human activities and potentially threatens public health.

Airport Pesticide Use



	2006	2007	2008	2009	2010	2011	2012
○ Green Pounds	28.5	0	160	507	1168.9	1755.1	346.3
● Green Gallons	42	31.2	19	9.9	0	0	0
○ Yellow Pounds	2,107.30	1,349.90	678.6	993.4	1,395.20	678.8	650.6
○ Yellow Gallons	125.6	140	137.8	128	135.6	105.1	87.9
● Red Pounds	231.9	30	0	623.6	278.9	0	0
● Red Gallons	0	0	0.75	0	0	4	0

Public Works Department Pesticide Use

The Public Works Department is comprised of a number of Divisions. For the purpose of this report, the Parking Division, Vector Control, Streets Division, and Facilities Maintenance Division are included.

The Public Works Department increased its use of pesticides from 711.3 in 2011 to 786.7 in 2012. Green materials increased from 706 units to 756.5 units. Use of Yellow materials increased from 5.3 units to 23.1 units due to increased insect control in buildings. Red material use increased from zero to 7.1 units.

Alternatives Used

The Parking Division used no pesticides in 2012 and continues to use alternative methods for weed control including hand-weeding and weed whipping. Weed abatement continues to require a large amount of time and effort using non-chemical methods. Alternative practices for pest management include plant replacement, worm castings, and washing off insects with water pressure.

Vector Control utilizes mechanical traps instead of rodenticide for rodent abatement. There are 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 1,042. Alternative use hours for this effort are 412.

Beekeepers are utilized for bee abatement in the public right-of-way. In 2012, 45 hives and/or swarms were relocated with zero loss. The alternative use hours for this effort total 176.

The Facilities Maintenance Division utilized mechanical traps instead of rodenticide for rodent abatement inside City facilities.

Exemptions:

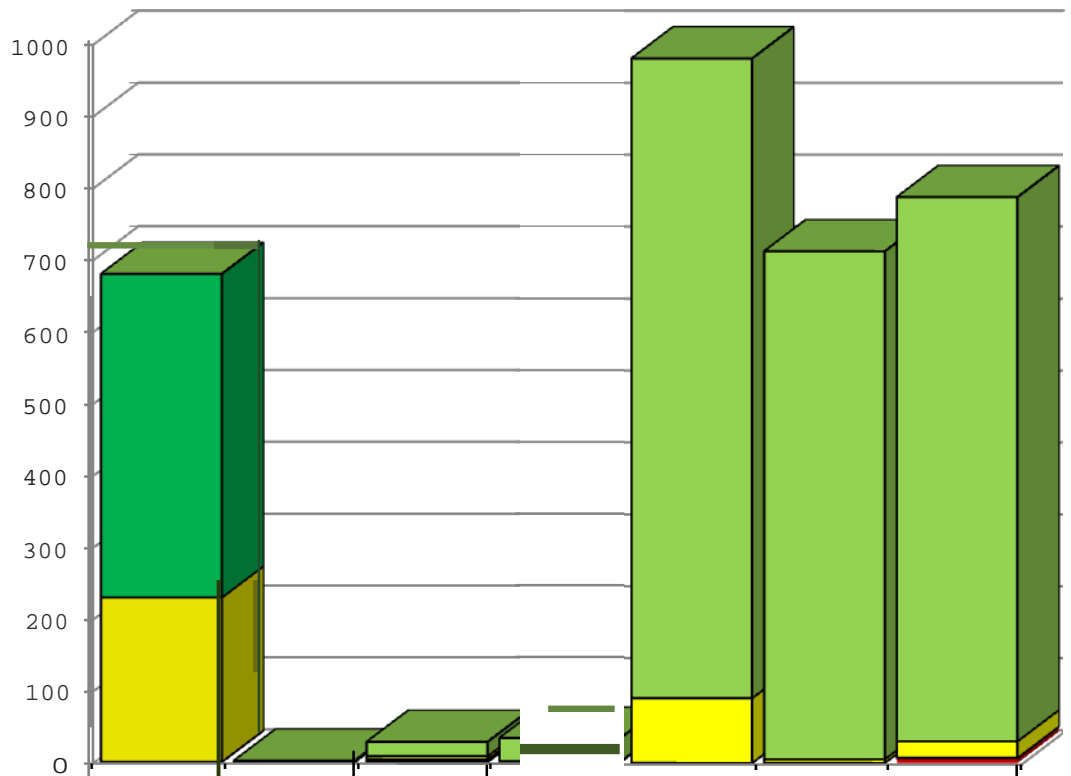
The Facilities Maintenance Division was granted three exemptions for 2012, which were for the Yellow materials Advion, Termidor, and Timbor. The exemptions were for the control of ants and termites in buildings. Advion and Termidor were used successfully. The exemption for Timbor was not used.

Infractions

An Infraction is the application of a restricted material without an exemption. An exemption is required to use materials that are not on the Approved Materials List (see attachment A) or to use higher risk materials in areas designated as lower risk (using a Red material in a Yellow area or a Yellow material in a Green area).

The Public Works Department made one application of Vikane, a Red insecticide. This material is not on the Approved Materials List. A staff member from Public Works, who was not familiar with the City's IPM Strategy, authorized the fumigation of an unoccupied City-owned building without following the set process of applying for an exemption, or requesting an emergency exemption from the IPM Coordinator. To ensure this does not occur again, staff has been retrained on the IPM strategy.

Public Works Pesticide Use



○ Green Pounds	2006	2007	2008	2009	2010	2011	2012
● Green Gallons	0	0.5	20	32.5	889.3	706	756.5
○ Yellow Pounds	450.5	0	0.01	0.1	0.1	0	0
○ Yellow Gallons	0	0	4.5	0	90	5.2	23
● Red Pounds	0	0	3.4	1	0.065	0.09	0.13
● Red Gallons	228.6	1.4	0.14	0	0	0	0
	0.31	0	0.08	0	0	0	0
	0	0	0.08	0	0	0	7.1

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.

- Fifteen exemptions were requested from the IPM Committee in 2012 as summarized in the table to the right and listed in the table below.
- Of the fifteen requests approved, five were not implemented.

2012 Exemption Summary

Exemptions	Facilities	Golf	Parks	Totals
Emergency				
Proposed	3	10	2	15
Passed	3	10	2	15
Denied				
Applied	2	7	1	10
Not Applied	1	3	1	5

Exemption Detail Table

Vote	Dept. / Div.	Material	Type	Type	Exemption Type	Used	Site
Passed	Env. Serv.	Advion	Insecticide	Yellow	Programatic	Yes	Buildings
Passed	Env. Serv.	Termidor	Insecticide	Yellow	Programatic	Yes	Buildings
Passed	Env. Serv.	Timbor	Insecticide	Yellow	Programatic	No	Buildings
Passed	Golf	Acelepryn	Fungicide	Green	Programatic	Yes	Greens
Passed	Golf	Affirm	Fungicide	Yellow	Programatic	No	Greens
Passed	Golf	Banner-maxx	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Daconil	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Heritage	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Medallion	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Merit	Insecticide	Red	Programatic	No	Greens
Passed	Golf	Primo Maxx	Regulator	Green	Programatic	Yes	Greens
Passed	Golf	Prostar	Fungicide	Yellow	Programatic	No	Greens
Passed	Golf	Trimmit	Regulator	Yellow	Programatic	Yes	Greens
Passed	Parks	Aquamaster	Herbicide	Yellow	Programatic	Yes	Parma Park
Passed	Parks	Diphacinone	Rodenticide	Yellow	Programatic	No	Shoreline, Leadbetter, Chase Palm Parks

Comparison of Exemptions for 2011 and 2012

	2011	2012
Number of Exemption Requests	15	15
Number of Exemption Requests Approved	14	15
Number of Approved Exemption Requests Applied	12	10
Number of Approved Exemption Requests Not Applied	3	5

VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2012

Non-chemical pest management alternatives used in 2012 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 decreased from 15,323 in 2011 to 9,713 in 2012.

PEST	Alternative	Airport	Golf	Public Works	Parks	Citywide Hours
WEEDS	Mulch & wood chips	✓	✓	✓	275	275
	Weed fabric				✓	0
	Propane flame weeder				✓	0
	Hot water/ steam				✓	0
	Hand weeding	3,868	700	✓	900	5,468
	Weed whip	411	✓		2,016	2,427
	Habitat modification				✓	0
	Irrigation Mgmt.	✓	✓	✓	✓	0
	Host plants squeeze out					0
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
	Resistant varieties					0
	Remove plant/tree				✓	0
GOPHERS	Traps	69	✓	✓	200	269
SQUIRRELS	EPA exempt bait					0
	Traps		✓		100	200
	Habitat modification					
RATS & MICE	Mechanical traps	3		782	95	880
	Cat				✓	0
MOSQUITOES	Mosquito fish				✓	0
	Remove stagnant water				✓	0
BEES	Bee Keepers			176	✓	176
OTHER	Glue traps/roaches			18		18
	Heat Treatment					0
Total Hours		4,351.0	700	976.0	3,586	9,713

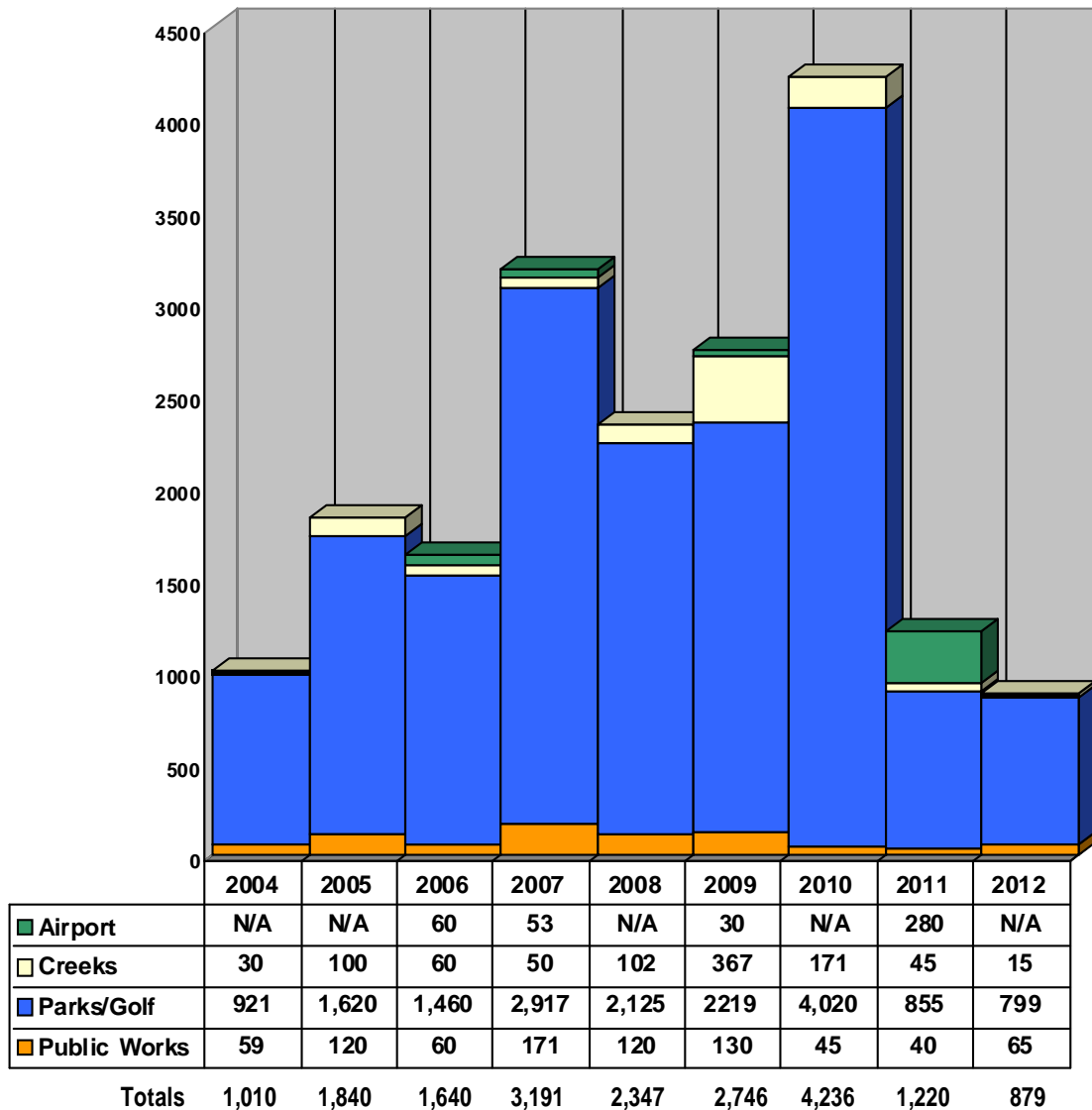
Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2012.

Mulch Use Table

Yards of Mulch by Type	Creeks	Parks/Golf	Public Works	City Totals
Biosolids		22		22
Woodchips	15	799	65	879
Total Yards	15	821	65	901

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 the clove oil based Burnout II, 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 and electrical traps, is the primary method of control at this time. This method is moderately effective at controlling populations. Some control has been achieved using food grade baits. 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 new challenges due to the financial climate. Budget considerations and the reduction of staff may require a change in service levels and aesthetic expectations or a greater reliance on more cost effective traditional pesticides. 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 six 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 may again seek exemptions for fumitoxin to control rodents on the airfield, and Vikane to treat drywood termites in Airport buildings. Alternative effort hours are expected to remain static.

IX. CONCLUSION

Overall, the City decreased its use of pesticides in 2012. The decrease was in Yellow materials, which declined by 3.7%, and Green materials, which declined 54%. Red materials rose by 112% primarily due to an unapproved use of Vikane to treat a City-owned building for termites.

During these times of reduced budgets, it is 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 be necessary if funds are not available for the increased labor of alternative practices.

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 Sulfate 1%	Green	Insecticide
Advion Ant Arena	Indoxacarb	Yellow	Insecticide

Product Name	Active Ingredient	ZONE	Type
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
Quick Pro	glyphosate/diquat	S. C.	Herbicide
Reward	diquat dibromide	S. C.	Herbicide

Product Name	Active Ingredient	ZONE	Type
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.