City of Santa Barbara
Integrated Pest Management Strategy

Draft 2010 Annual Report

Prepared February 2011

P.O. Box 1990
Santa Barbara, California, 93102
(805) 564-5434
www.santabarbaraca.gov
http://www.santabarbaraca.gov/Resident/Community/Parks_and_Beaches/Integrated_Pest_Management.htm

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I. INTRODUCTION

In January 2004, the City of Santa Barbara (City) adopted a jurisdiction–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. This 2010 IPM Annual Report is the seventh Annual Report for the program.

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 practice implemented
- Planned changes to pest management practices

In addition to the areas described above, the 2010 Annual Report discusses the Pesticide Hazard And Exposure Reduction (PHAER) Zone System adopted by the City Council in February 2006.

Integration of the 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 adopted the PHAER system to be incorporated into the IPM Strategy.

The PHAER 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

The Staff IPM Committee continued to work effectively with the Citizen IPM Advisory Committee to administer the IPM Strategy, and oversee pest management practices. In 2010 the Citizen IPM Advisory Committee met four times to discuss and act on IPM policies and practices. The 2010 Citizen IPM Advisory Committee included the following representatives: Greg Chittick, community at large, Oscar Carmona, community at large, Kristen LaBonte, community at large, and Corey Welles from the Pesticide Awareness and Alternative Coalition. The Environmental Defense Center representative position remained unfilled for 2010.

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

IPM Advisory Committee Dissentions

In 2010, there were no IPM Advisory Committee dissentions. A dissention is when a vote is not unanimous.

II. 2010 PROGRAM SUMMARY

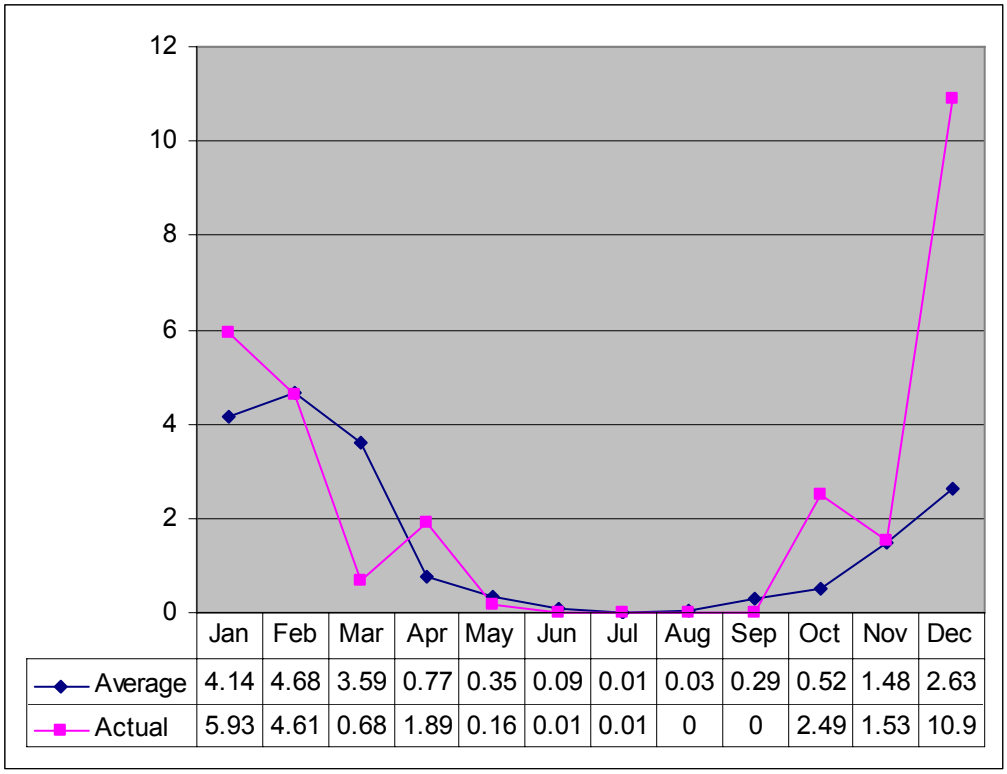
In 2010, pesticide use increased 1,613.8 units, from 2,369.4 units in 2009 to 3,983.2 units in 2010. This includes a decrease in the use of Red materials from 676 units to 289.3 units. The use of Yellow materials increased from 1,133.9 units to 1,633.4 units. The use of Green materials increased from 559.5 units to 2060.5 units. The vast majority of the increases in Green and Yellow materials is from the control of mosquitoes. The control of mosquitoes accounted for 83% of all the pesticides used City-wide in 2010.

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.

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

The graph below shows the higher than normal rainfall experienced in January, October and especially in December.

2010 Rainfall Chart



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	4.14	4.68	3.59	0.77	0.35	0.09	0.01	0.03	0.29	0.52	1.48	2.63
Actual	5.93	4.61	0.68	1.89	0.16	0.01	0.01	0	0	2.49	1.53	10.9

City-Wide

- The total units of pesticides applied increased from 2,369.4 in 2009 to 3,983.2 in 2010.
- Units of Green materials increased from 559.5 to 2,060.5.
- Units of Yellow materials increased from 1,133.9 to 1,633.4.
- Units of Red materials decreased from 676 to 289.3.
- The number of times pesticides were applied (including Green, Yellow, and Red materials) decreased from 211 in 2009 to 186 in 2010.

Airport Department

- The units of pesticides applied increased from 2,261.9 in 2009 to 2,978.7 in 2010.
- Units of Green materials increased from 516.9 to 1,168.9.
- Units of Yellow materials increased from 1,121.4 to 1,530.9.
- Units of Red materials decreased from 623.6 to 278.89
- The Airport spent 2,261.25 hours of manual weed control in PHAER Green areas and in native habitat restoration areas and 70.5 hours of mechanical gopher control.

Creeks Division, Parks and Recreation Department

- The units of pesticides applied decreased from 11.4 in 2009 to .36 in 2010.
- Units of Green materials decreased from10 to zero.
- Units of Yellow materials decreased from 1.4 to .36.
- No Red materials were applied.
- 171 yards of mulch was spread.

Golf Division, Parks and Recreation Department

- The units of pesticides applied decreased from 55.2 in 2009 to 16.6 in 2010.
- Units of Green materials increased from zero to .25.
- Units of Yellow materials increased from 2.7 to 6.0.
- Units of Red materials decreased from 52.4 to 10.4
- The golf course continues to brew microorganisms and compost tea for the greens.
- 3000 yards of mulch was spread.

Parks Division, Parks and Recreation Department

- The units of pesticides applied decreased from 18.8 in 2009 to 8.3 in 2010.
- Units of Green materials decreased from 10 to 1.9.
- Units of Yellow materials decreased from 8.8 to 6.4.
- No Red materials were applied in 2010.
- 870 yards of mulch was spread.

Public Works Department

- The units of pesticides applied increased from 33.6 units in 2009 to 979.6 in 2010.
- Units of Green materials increased from 32.6 to 889.5.
- Units of Yellow materials increased from 1 to 90.1.
- No Red materials were applied in 2010.

III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2010 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	✓	✓	**2**	✓			✓
	Gulls/ nuisance birds	✓		**2**	✓	✓		**2**
	Moles			**2**	✓			
	Raccoons	✓		**2**				
	Skunks	✓		**2**				
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.

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IV. TOTAL PESTICIDE USE

Data has been collected for City-wide pesticide application since 2004. 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, followed by a graph depicting pesticide use.

There are a number of factors that affect pesticide use. Theses 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.

It should also be noted that due to the change in 2006 from the Tier system to the PHAER system of pesticide classification, the graphs will show an expanded data list beneath each chart. The top data list is based on the PHAER system of pesticide classification and is valid for the 2006 - 2010 columns only. The lower data list is based on the Tier system and is included for prior years to provide historical data.

As the program continues into its eighth year, reduced budgets and staffing levels will continue to be a significant 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 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 2010, mainly because of the use Green materials to manage an increased mosquito population throughout the city. Pesticides applied increased from 2,369.4 units in 2009 to 3,983.2 units in 2010. The use of Green materials increased from 559.5 units to 2,060.5 units. The use of Yellow materials increased from 1,139.9 units to 1,633.4 units and Red materials decreased from 676 units to 289.3 units. The control of mosquitoes accounted for 83% of all the pesticides used City-wide in 2010.

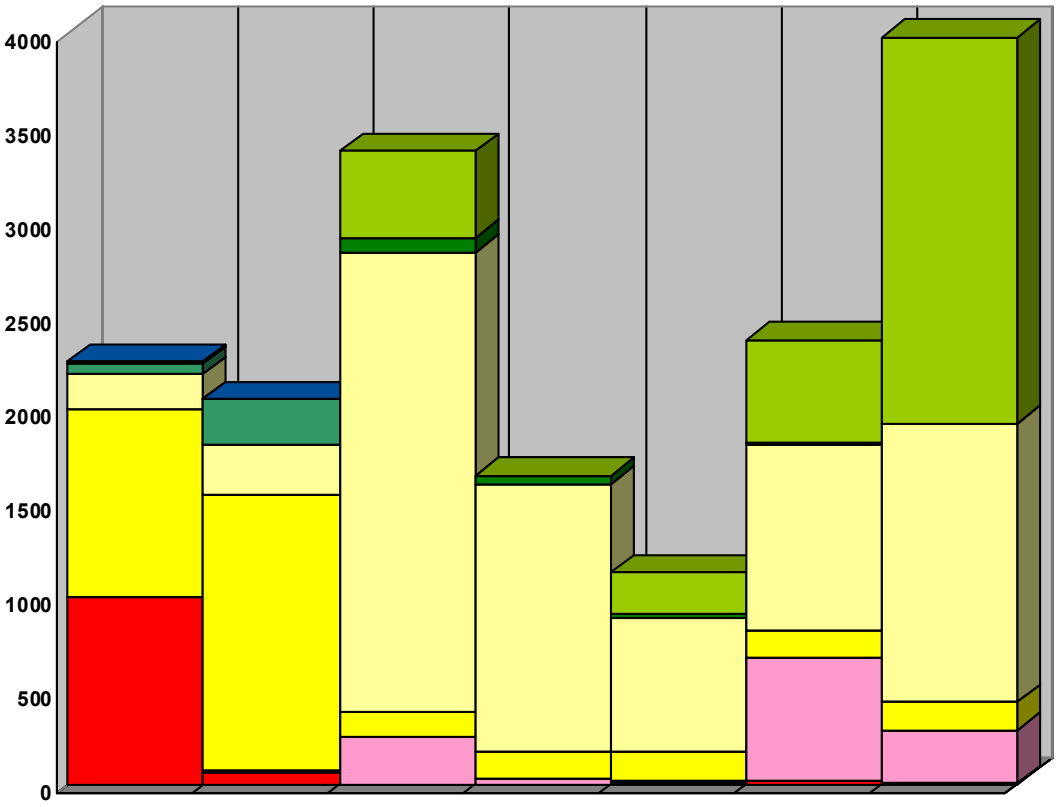
The table below provides a summary of the pesticides applied on City property in 2010. Pesticides are reported in either pounds or gallons depending on if they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and Rodenticide. 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	Airport		Golf		Parks and Recreation		Public Works		Airport	Golf	Parks and Recreation	Public Works
				Amount of Pesticide Applied								Applications			
				Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds				
	Acelepryn	Chlorantraniliprole	Insecticide			0.25							1		
	Advion Roach Stations	Indoxacarb	Insecticide							0.01					3
	Borid Turbo	Orthoboric Acid	Insecticide							0.1					1
	Cease Biofungicide	B. subtilis	Fungicide					1.875						3	
	Vectobac G	Bti	Insecticide		1168.9						693.28	41			
	VectoLex CG	B. sphaericus	Insecticide								196.07				
			Green Totals	0	1168.9	0.25	0	1.875	0	0.11	889.35	41	1	3	4
	Advion Roach Gel	Indoxacarb	Insecticide							0.04					3
	Advion Insect Granuals	Indoxacarb	Insecticide								2				2
	Altosid Pellets	Methoprene	Insecticide		0.04						88.05	2			
	Altosid Briquettes	Methoprene	Insecticide		4.76							1			
	Altosid XR-B	Methoprene	Insecticide		1,185.90							5			
	Aquamaster	Glyphosate	Herbicide					0.54						4	
	Ditrac	Diphacinone	Rodenticide		19.56							11			
	Kop-R-Spray	Copper Oil	Fungicide					0.375						1	
	Omni Oil	Mineral Oil	Insecticide					1.125						1	
	Rose Defense	Neem Oil	Insecticide					0.625						1	
	Round-up Pro	Glyphosate	Herbicide			5.97							25		
	Round-up Pro Max	Glyphosate	Herbicide	85.65				3.63				24		24	
	Surflan	Oryzalin	Herbicide	50								4			
	Termidor SC	Fipronil	Insecticide							0.025					1
	Wasp Freeze	Alethrin	Insecticide					0.13						1	
	Wilco Squirrel Bait	Diphacinone	Rodenticide		185							6			
			Yellow Totals	135.65	1395.26	5.97	0	6.425	0	0.065	90.05	53	25	32	6
	Banner-maxx	Propiconazole	Fungicide			2							1		
	Daconil	Chlorothalonil	Fungicide			3.67							2		
	Fumitoxin	Aluminum phosphide	Rodenticide		278.89							9			
	Heritage	Azoxystrobin	Fungicide			1.5							4		
	Medallion	Fludioxonil	Fungicide				3.06						1		
	Trimmit 2SC	Paclobutrazol	Regulator			0.14							4		
			Red Totals	0	278.89	7.31	3.06	0	0	0	0	9	12	0	0
			Department Totals	**135.65**	**2843.05**	**13.53**	**3.06**	**8.3**	**0**	**0.175**	**979.4**	**103**	**38**	**35**	**10**
	City-wide Totals:			**Gallons**	**157.655**			**Pounds**	**3,825.510**			**Applications**			**186**

City-wide Pesticide Use



	2004	2005	2006	2007	2008	2009	2010
PHAER							
Green Pounds			489.05	.5	220	549.5	2058.25
Green Gallons			48.5	42.96	19.01	10	2.235
Yellow Pounds			2449.91	1,421.95	717.132	993.38	1485.31
Yellow Gallons			135.65	149.08	150.458	140.53	148.11
Red Pounds			246.93	30.56	16.201	656.28	281.95
Red Gallons			3.75	1.25	9.191	19.73	7.31
History							
Tier 4 Gallons							
Tier 4 Pound	9	3.4					
Tier 3 Gallons	1.1	1.25					
Tier 3 Pounds	54	236.54					
Tier 2 Gallons	195.5	267.04					
Tier 2 Pounds	992	1469.03					
Tier 1 Gallons	5.5	9					
Tier 1 Pounds	995.9	70					
Totals	**2253**	**2056.26**	**3373.79**	**1646.3**	**1,131.992**	**2,369.40**	**3,983.17**

Parks Division Pesticide Use

Pesticide use by the Parks Division decreased in 2010. The use of Green materials decreased from 10 units to 1.9 units due primarily to mosquito controls being applied by Environmental Services rather than Parks staff. There was a decrease in Yellow materials from 8.8 units to 6.4 units. No Red materials were used this year on any parkland.

Alternatives Used

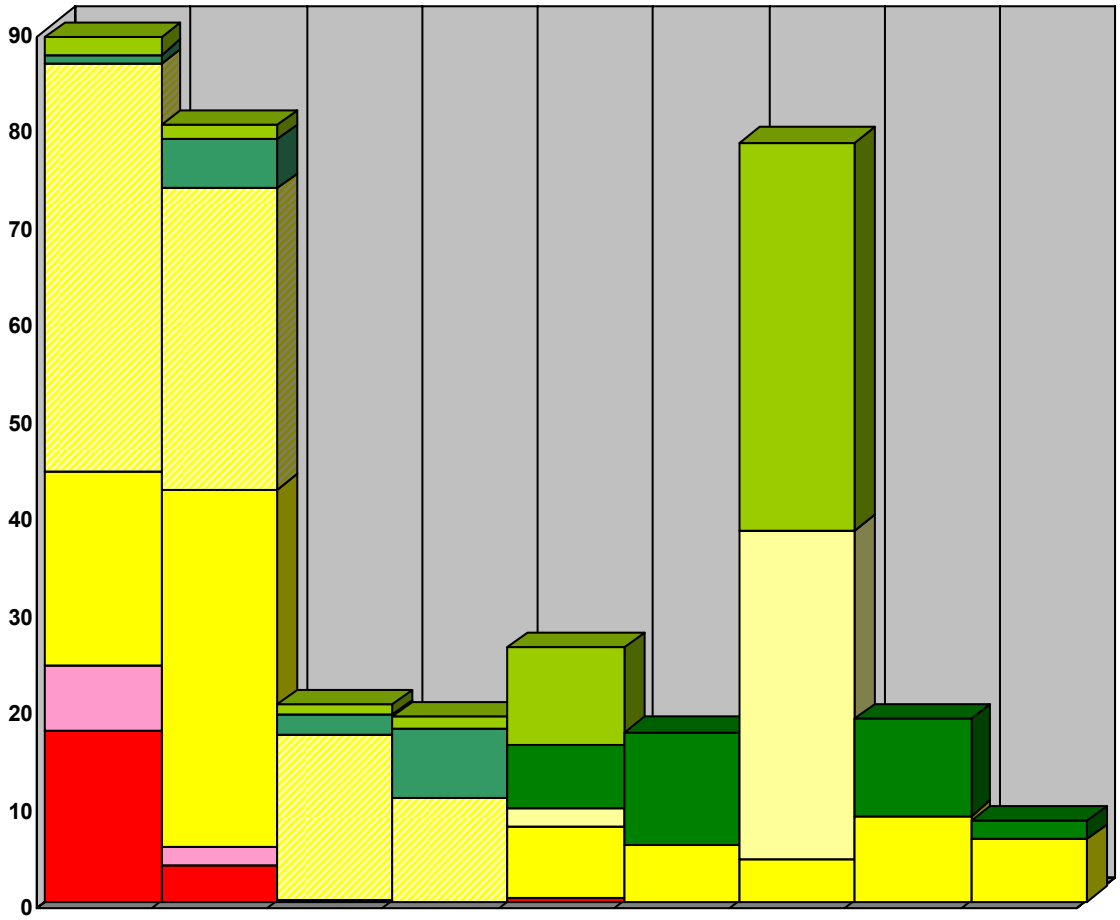
The Parks Division performed 3,245 hours of alternative pest management. The Parks Division used a weed flamer on sidewalk cracks and rocky areas as well as applying 870 yards of mulch and biosolids in planter areas. The Parks Division is also experimenting with sheet mulching, installing a layer of cardboard under the mulch, at Sheffield Open Space. However, as in years past, the majority of work went into hand weeding and mechanical weeding with power equipment.

Various other alternatives were practiced in 2010, including trapping for rodents and the continued use of Sluggo for snail and slug control. Staff successfully relocated twelve bee hives in 2010. The Parks Division also continues to search for alternative herbicides in hopes of finding effective products.

Exemptions

The Parks Division applied for four exemptions. The first exemption request was for the use of Glyphosate at Parma Park to eradicate invasive weeds and poison oak in areas inaccessible to power equipment. This exemption was granted and used successfully. The second exemption request was for the use of Glyphosate to treat invasive Arundo donax at Shoreline Park. This exemption was granted and used successfully. The third was an exemption request for the use of Glyphosate to eradicate the turf at the Louise Lowry Davis Center in order to install a low-water use landscape. This exemption was granted and used successfully. The fourth exemption request was for the use of Diphacinone for the control of squirrels at Shoreline Park, Leadbetter Beach Park, and Chase Palm Park. This exemption was granted but not used due to the squirrel population not rising to problematic levels.

Parks Division Pesticide Use



	2002	2003	2004	2005	2006	2007	2008	2009	2010
PHAER									
Green Pounds					10		40		
Green Gallons					6.5	11.71		10	1.875
Yellow Pounds					2		34		
Yellow Gallons					7.43	5.71	4.24	8.78	6.425
Red Pounds									
Red Gallons					0.25				
History									
Tier 4 Gallons									
Tier 4 Pound									
Tier 3 Gallons	1.75	1.5	1	1.25					
Tier 3 Pounds	1	5.05	2	7					
Tier 2 Gallons	42	31	17	10.71					
Tier 2 Pounds	20	37							
Tier 1 Gallons	6.7	1.7	0.22						
Tier 1 Pounds	17.6	3.8							
Totals	**89.05**	**80.05**	**20.22**	**18.96**	**26.18**	**17.42**	**78.24**	**7.38**	**8.3**

Golf Division Pesticide Use

The Golf Division decreased its material use from 55.2 units in 2009 to 16.6 units in 2010. Although there was an increase in Yellow materials from 2.7 units to 6 units, there was a decrease in Red materials from 52.4 units to 10.4 units. Due to a wetter than normal winter, there was an increase in weed populations leading to an increase in Yellow herbicides used. However, the increase in bentgrass populations and alternative greenskeeping methods led to a reduction in disease pressure during the winter and summer months leading to a decrease in the use of Red fungicides. The Golf Division continues to implement alternative agronomic methods to control disease pressures and limit pesticide use. Unfortunately, extreme environmental conditions create disease outbreaks on the greens that can only be controlled with fungicides.

Alternatives Used

The two recently rebuilt, disease resistant bentgrass greens have been removed from the fungicide spray program reducing the overall amount of pesticides used.

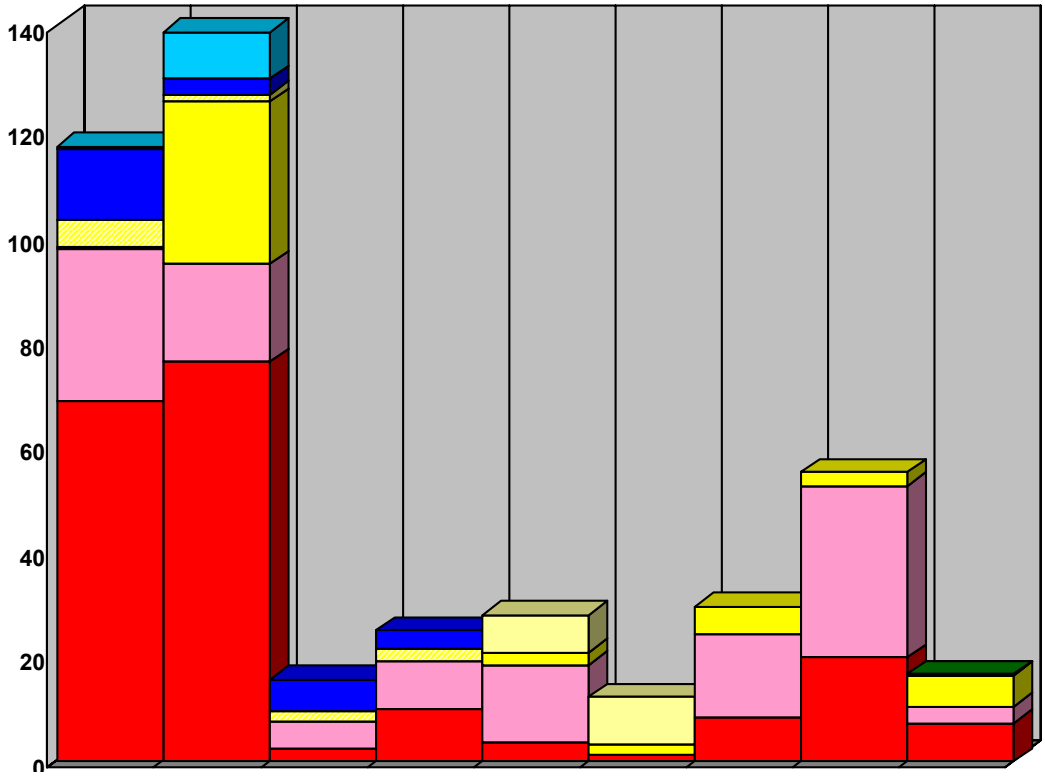
The golf course used the Green insecticide Aceleypryn successfully for grub control on the greens. Acelepryn is the only grub control product that is not required by the EPA to include a Signal Word on the label.

The golf course continues to implement “Old World” agronomy practices to establish finer leaf turfgrasses. This approach has led to an increase in bentgrass populations which require less fertilizer, chemical and irrigation use. The total amount of Red materials was reduced, when compared to 2009 by 80% due to these changes. Areas of the putting green 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 that is brewed on-site will help reduce Red and Yellow pesticide use at the Santa Barbara Golf Club.

Exemptions

The Golf Division applied for and received eight exemptions. The exemptions were for the fungicides Banner-Maxx, Daconil, Heritage, Medallion, Prostar and Affirm; the insecticide Acelepryn and the herbicide/growth regulator Trimmit. All of the exemptions targeted the greens.

Golf Division Pesticide Use



	2002	2003	2004	2005	2006	2007	2008	2009	2010
PHAER									
Green Pounds									
Green Gallons									0.25
Yellow Pounds					7	9			
Yellow Gallons					2.31	1.94	4.97	2.75	5.97
Red Pounds					15		16.06	32.68	3.06
Red Gallons					3.5	1.25	8.361	19.73	7.31
History									
Tier 4 Gallons	0.04	8.75							
Tier 4 Pound	13.7	3.13	6	3.4					
Tier 3 Gallons									
Tier 3 Pounds									
Tier 2 Gallons	5.1	1.4	1.9	2.5					
Tier 2 Pounds	0.19	30.84							
Tier 1 Gallons	28.9	18.7	5.3	9					
Tier 1 Pounds	68.8	76	2.45	10					
Totals	**116.73**	**138.82**	**15.65**	**24.9**	**27.81**	**12.19**	**29.391**	**55.16**	**16.59**

Airport Department Pesticide Use

Airport pesticide applications concentrated on three types of pests in 2010: mosquitoes, rodents and weeds. Airport elected to apply Red materials to control gophers on the airfield. Exemption requests were made and approved by the IPM Advisory Committee. The Red material was the most appropriate approach to control the problem pests.

Mosquitoes

Airport relies primarily on Altosid XR, a Yellow extended release larvicide to control mosquito sources in the Goleta Slough. In wet years, a second application of Altosid XR is needed due to storm water remaining in large basins. In 2010, wet conditions dictated the need for reapplication of Altosid XR. As a result both Green and Yellow materials used to control mosquitoes doubled. Airport has worked with the Mosquito and Vector Management District to rely more heavily on the Green, Bti based product, Vectobac G to control smaller residual mosquito sources in the short term. Bti based products are only effective for about 10 days.

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.

Rodents

In 2010 the Airport again made a concerted effort to reduce airfield rodent populations. 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 is required by FAA to maintain safety areas in a smooth, compact condition. On-going rodent control is necessary to maintain a safe environment for aircraft operations.

Gophers outside the airfield fence were controlled with mechanical steel traps.

Alternatives Used

Alternative efforts focused on the control of weeds through mechanical methods, including string trimming, hand weeding and hoeing. The number of hours devoted to alternative pest control decreased dramatically from 14,024 in 2009 to 2,347.25 hours in 2010. The decrease reflects the establishment of the native habitat restoration requiring reduced weeding.

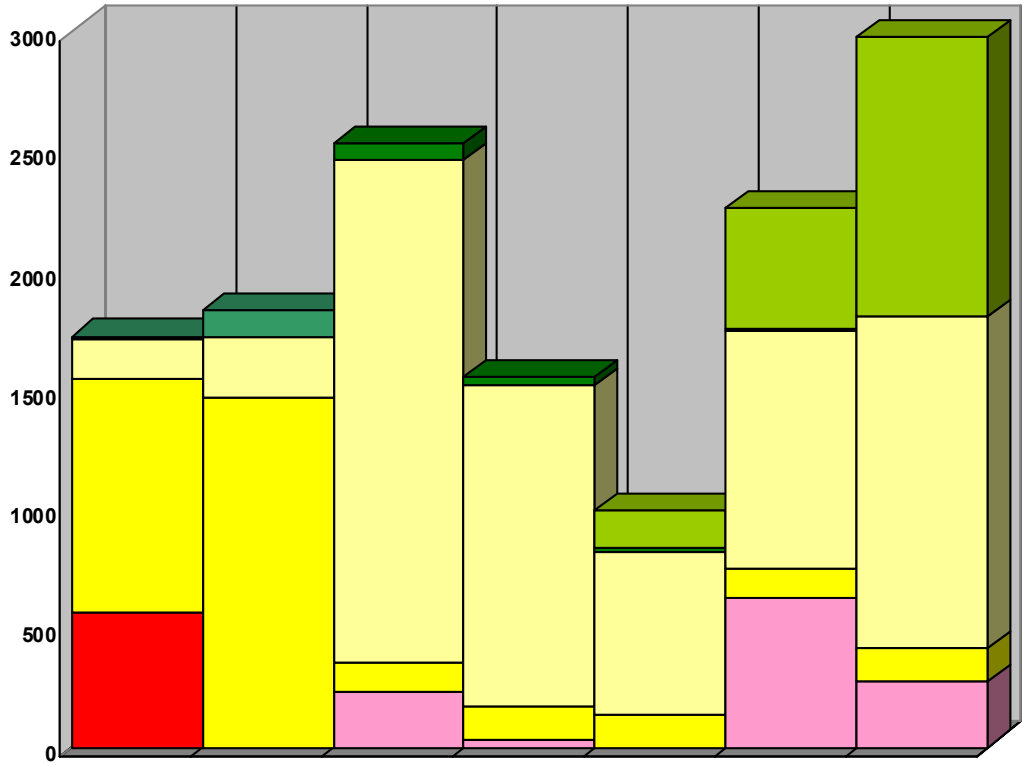
During the year Airport used a beekeeper to remove multiple swarms of bees from the Airport.

Paysage Inc., the Airport's landscape contractor, used a propane torch to control weeds on the Hollister Ave. island.

EXEMPTIONS

The Airport applied for and received two exemptions in 2010 - Fumitoxin and Vikane. The Fumitoxin was used successfully to control rodents. The exemption for Vikane was not used.

Airport Pesticide Use



	2004	2005	2006	2007	2008	2009	2010
PHAER							
Green Pounds			28.5		160	507	1,168.90
Green Gallons			42	31.25	19	9.9	
Yellow Pounds			2107.31	1,349.95	678.625	993.38	1,395.26
Yellow Gallons			125.61	140.05	137.855	128	135.65
Red Pounds			231.93	30.06		623.6	278.89
Red Gallons					0.75		
History							
Tier 4 Gallons							
Tier 4 Pound							
Tier 3 Gallons							
Tier 3 Pounds	12.5	115.4					
Tier 2 Gallons	170.9	247.2					
Tier 2 Pounds	972.3	1469					
Tier 1 Gallons							
Tier 1 Pounds	568						
Totals	**1723.7**	**1831.6**	**2535.35**	**1551.31**	**995.48**	**2261.88**	**2,978.70**

Public Works Department Pesticide Use

The Public Works Department increased its use of pesticides in 2010. Green materials increased from 32.6 units in 2009 to 889.5 units in 2010 primarily due to the use of the Green material Bti to treat for mosquitoes. Use of Yellow materials increased from 1 unit in 2009 to 90 units in 2010, also due to increased mosquito control. Although the Environmental Services Division oversees mosquito control at multiple sites, the Andree Clark Bird Refuge receives the majority of material applications for this Division. No Red materials were applied in 2010.

Alternatives Used

The Parking Division used no pesticides in 2010 and continues to use alternative methods for weed control including hand weeding, weed whipping, and limited use of weed burning. A total of 675 hours were devoted to non chemical methods of weed control in 2010. In addition, 45 cubic yards of mulch were added to planting areas to discourage weed growth. A total of 109 rodents were trapped, and 330 feet of bird deterrent was installed in problem areas.

Vector Control utilizes mechanical traps instead of rodenticide for rodent abatement. There are 106 mechanical trap stations on State Street and 40 on Coast Village Road. The number of rodents caught by mechanical traps on State Street and Coast Village Road totaled 1,651. Alternative use hours for rodent trapping are 1,300.

Beekeepers are utilized for bee abatement in the public right of way. Hives are euthanized only in the rare circumstance where the bees cannot be relocated. In 2010 twenty-five hives were relocated with zero loss. The alternative use hours for this effort total 57.

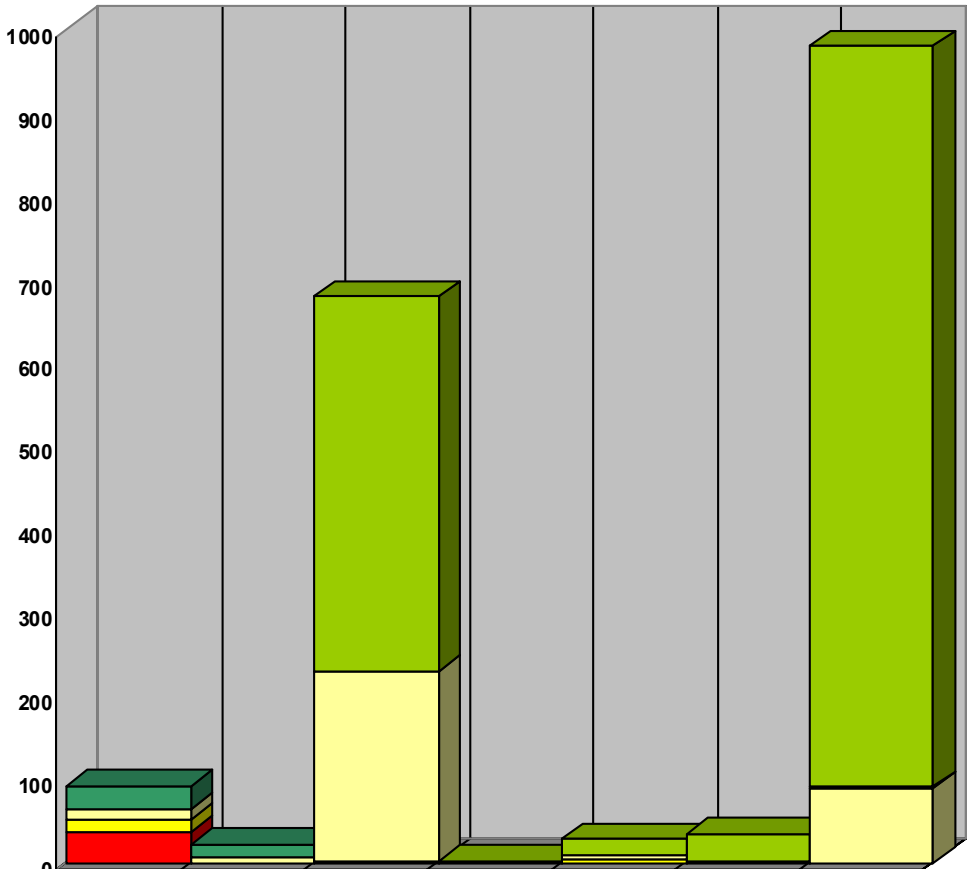
The Streets Division managed weeds in traffic calming areas with hand weeding and mulching.

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

Exemptions:

Two exemptions were requested in 2010. One exemption was for the use of the Yellow material Altosid for mosquito control. The exemption was applied for and granted in June of 2010 for the Andre Clark Bird Refuge as mosquito populations grew beyond thresholds even with standard applications of the Green material Bti. Two applications of Altosid occurred in this same month and population control was achieved. No further Altosid applications were necessary. The second exemption was for the Yellow material Advion for ant control in West Side Center and Franklin Center. The exemption was granted and used successfully.

Public Works Pesticide Use



.	2004	2005	2006	2007	2008	2009	2010
PHAER							
Green Pounds				0.5	20	32.5	889.35
Green Gallons			450.55		0.01	0.104	0.11
Yellow Pounds					4.507		90.05
Yellow Gallons			228.6	1.38	3.393	1	0.065
Red Pounds			0.31		0.141		
Red Gallons					0.08		
History							
Tier 4 Gallons							
Tier 4 Pound							
Tier 3 Gallons							
Tier 3 Pounds	27	15.16					
Tier 2 Gallons	13	6.625					
Tier 2 Pounds	14	0.031					
Tier 1 Gallons							
Tier 1 Pounds	37						
Totals	**91**	**21.816**	**679.46**	**1.88**	**28.131**	**33.6**	

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.

- 16 exemptions were requested in 2010 as summarized in the table to the right and listed in the table below.
- No emergency exemptions were requested in 2010.
- All 16 requests were for planned action and were granted by the IPM Citizens Advisory Committee.
- Of the 16 requests approved, 4 were not implemented.

2010 Exemption Summary

Exemptions	Airport	Env. Serv.	Facilities	Golf	Parks	Totals
Emergency						
Proposed	2	1	1	8	4	16
Passed	2	1	1	8	4	16
Denied						
Applied	1	1	1	6	3	12
Not Applied	1			2	1	4

Exemption Detail Table

Vote	Dept. / Div.	Material	Type	Type	Exemption Type	Used	Site
Passed	Airport	Fumitoxin	Rodenticide		Programatic	Yes	Airfield
Passed	Airport	Vikane	Insecticide		Programatic	No	Buildings
Passed	Env. Serv.	Altosid	Insecticide		Programatic	Yes	Bird refuge
Passed	Facilities	Advion	Insecticide		Programatic	Yes	Franklin Center & Westside Center
Passed	Golf	Acelepryn	Fungicide		Programatic	Yes	Greens
Passed	Golf	Affirm	Fungicide		Programatic	No	Greens
Passed	Golf	Banner-maxx	Fungicide		Programatic	Yes	Greens
Passed	Golf	Daconil	Fungicide		Programatic	Yes	Greens
Passed	Golf	Heritage	Fungicide		Programatic	Yes	Greens
Passed	Golf	Medallion	Fungicide		Programatic	Yes	Greens
Passed	Golf	Prostar	Fungicide		Programatic	No	Greens
Passed	Golf	Trimmit	Herbicide		Programatic	Yes	Greens
Passed	Parks	Diphacinone	Rodenticide		Programatic	No	Shoreline Park, Leadbetter, Chase Palm
Passed	Parks	Glyphosate	Herbicide		One Time	Yes	Parma Park
Passed	Parks	Glyphosate	Herbicide		Programatic	Yes	Louise Lowry Davis Center
Passed	Parks	Glyphosate	Herbicide		One Time	Yes	Shoreline Park
Vote	Dept. / Div.	Material	Type	Type	Exemption Type	Used	Site

Comparison of Exemptions for 2009 and 2010

	2009	2010
Number of Exemption Requests	17	16
Number of Exemption Requests Approved	16	16
Number of Approved Exemption Requests Applied	9	12
Number of Approved Exemption Requests Not Applied	7	4

VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2010

Non-chemical pest management alternatives used in 2010 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 declined from 19,936 in 2009 to 8,326 in 2010, primarily due to the establishment and growth of the new landscape areas at the Airport requiring less weeding.

PEST	Alternative	Airport	Golf	Public Works	Parks	Citywide Hours
WEEDS	Mulch & wood chips	✓	✓	✓	480	**480**
	Weed fabric					**0**
	Propane flame weeder	16		✓	28	**44**
	Hot water/ steam				8	**8**
	Hand weeding	2,110	701	500	1,300	**4,611**
	Weed whip	151	✓	175	1,026	**1,352**
	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	71	✓		388	**459**
SQUIRRELS	EPA exempt bait					**0**
	Traps		✓		15	**15**
	Habitat modification			✓		
RATS & MICE	Mechanical traps	✓		1,300	✓	**1,300**
	Cat				✓	**0**
MOSQUITOES	Mosquito fish	✓		✓		**0**
	Remove stagnant water				✓	**0**
BEES, WASPS, etc.	Bee Keepers			57	✓	**57**
	Remove hives	✓		✓	✓	**0**
OTHER	Glue traps/roaches			✓		**0**
	Heat Treatment	✓		✓		**0**
Total Hours		**2,348**	**701**	**2,032**	**3,245**	**8,326**

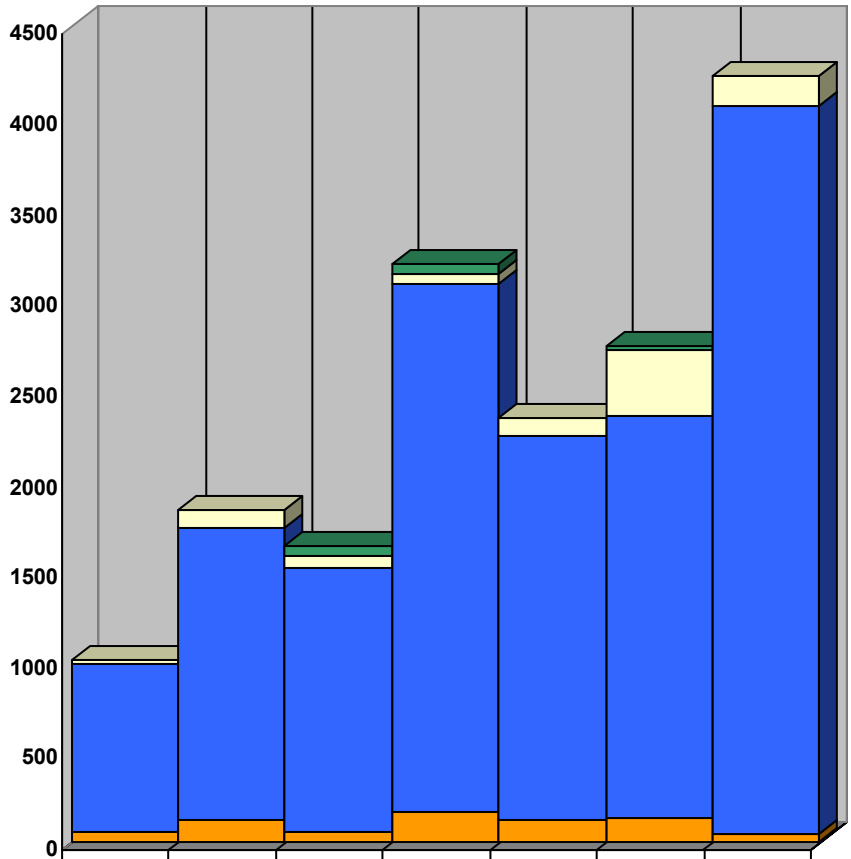
Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2010.

Mulch Use Table

Yards of Mulch by Type	Airport	Creeks	Parks/Golf	Public Works	City Totals
Biosolids			150		**150**
Woodchips		171	3,870	45	**4,086**
Total Yards		**171**	**4,020**	**45**	**4,236**

Mulch Use Comparison Chart



	2004	2005	2006	2007	2008	2009	2010
Airport	N/A	N/A	60	53	N/A	30	N/A
Creeks	30	100	60	50	102	367	171
Parks/Golf	921	1620	1460	2917	2125	2219	4,020
Public Works	59	120	60	171	120	130	45
Totals	**1,010**	**1,840**	**1,640**	**3,191**	**2,347**	**2,746**	**4,236**

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.
- **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 funguses
- **Disease:** No effective alternative has been found for most diseases. Where possible, staff focuses on preventative treatments to enhance plant health. Once disease strikes, pesticides are generally required to combat it.
- **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. The Waterfront Department employed a pest management company who caught 645 rats at a cost of $15.60 per rat.
- **Termites:** Building Maintenance now only uses heat treatments to control drywood termites. 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 2011

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 2010:

- The Parks Division will continue to implement the PHAER Zone model of Integrated Pest Management and continue studying alternative materials and methods. 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, such as the Acelepryn that was used for grub control on the golf greens this past year.
- The Airport Department will see alternative effort hours increase due to installation of the phase II tidal circulation project. The 10 acre site will be maintained by hand with contract labor. Airport will continue to look for opportunities to reduce the use of Yellow herbicides, however use appears to have stabilized.

IX. CONCLUSION

Overall, the City increased its use of pesticides in 2010. However, the majority of the increase is in the use of Green materials, which reduces the reliance on Yellow and Red materials. Green material use increased 268% from 2009, primarily due to the application of Green mosquito control materials. Yellow material use rose by 44% from 2009, also due primarily to mosquito control. The use of Red materials was reduced by 57%.

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 become more prevalent as funding for the maintenance of City parks, landscapes, and facilities decrease.

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 Model.

Product Name	Active Ingredient	ZONE	Tier	Type
Acelepryn	Chlorantraniliprole	Green	3	Insecticide
Advance Ant Bait	Orthoboric Acid	Green	3	Insecticide
Advion Roach Stations (enclosed)	Indoxacarb	Green*	3	Insecticide
AllDown	citric acid, acetic acid, garlic	Green	3	Herbicide
Any brand name	Orthoboric Acid ant bait station	Green	3	Insecticide
Avert Cockroach Bait Station	Abamectin B1 0.05%	Green	3	Insecticide
Avert Cockroach Gel Bait	Abamectin B1 0.05%	Green	3	Insecticide
Bactimos Pellets	Bt	Green	3	Insecticide
Bactimos Wettable	Bt	Green	3	Insecticide
Bio-Weed	corn gluten	Green	3	Herbicide
Borid Turbo	Orthoboric Acid	Green	3	Insecticide
BurnOut 2	clove oil	Green	3	Herbicide
Cease Biofungicide	B. subtilis	Green	3	Fungicide
Cinnamite	cinnamaldehyde	Green	3	Insect/Fung
Conserve	spinosad	Green	3	Insecticide
Dipel Flowable	Bt	Green	3	Insecticide
Drax Ant Kill PF	Orthoboric Acid	Green	3	Insecticide
EcoExempt	Wintergreen Oil	Green	3	Herbicide
EcoExempt D	2-Phenethyl propionate / Euginol	Green	3	Insecticide
Embark	mefluidide	Green	3	Growth Regulator
GreenErgy	Citric, Acetic Acid	Green	3	Herbicide
Kaligreen	potassium bicarbonate	Green	3	Fungicide
Matran (EPA Registration Exempt)	clove oil	Green	3	Herbicide
Natura Weed-A-Tak	clove oil	Green	3	Herbicide
Niban	Isoboric Acid 5%	Green	3	Insecticide
Safer Soap	potassium salts of fatty acids	Green	3	Insecticide
Sluggo	iron phosphate	Green	3	Other
Summit BTI Briquets	Bt	Green	3	Insecticide
Teknar HP-D	Bti	Green	3	Insecticide
Terro II	Orthoboric Acid	Green	3	Insecticide
Vectobac G	Btk	Green	3	Insecticide
VectoLex CG	bacillus sphaericus	Green	3	Insecticide
Victor Wasp and Hornet Killer	Mint Oil 8% & Sodium Lauryl Sulfate 1%	Green	3	Insecticide
Advion Ant Arena	Indoxacarb	Yellow	2	Insecticide

Product Name	Active Ingredient	ZONE	Tier	Type
Advion Roach Gel	Indoxacarb	Yellow	2	Insecticide
Advion Insect Granules	Indoxacarb	Yellow	2	Insecticide
Agnique MMF	POE Isoocatadecanol	Yellow	2	Insecticide
Aliette	fosetyl aluminum	Yellow	2	Fungicide
Altosid Briquettes	methoprene	Yellow	2	Other
Altosid Liquid	methoprene	Yellow	2	Other
Altosid Pellets	methoprene	Yellow	2	Other
Altosid XR-B	methoprene	Yellow	2	Other
Aquamaster-Rodeo	glyphosate	Yellow	2	Herbicide
Avid	abamectin	Yellow	2	Miticide/Insecticide
Ditrac	Diphacinone	Yellow	2	Rodenticide
Dormant	petroleum oil	Yellow	2	Insecticide
Green Light	Neem oil	Yellow	2	Insecticide/Fungicide
Kop-R-Spray	Copper Oil	Yellow	2	Fungicide
M-PEDE	potassium salts of fatty acids	Yellow	2	Insecticide
Omni Oil	Mineral Oil	Yellow	2	Fungicide
Prostar 70 WP	flutolanil	Yellow	2	Fungicide
Rose Defense	Neem oil	Yellow	2	Insect/Fung
Roundup Pro	glyphosate	Yellow	2	Herbicide
Roundup ProMax	glyphosate	Yellow	2	Herbicide
Safticide Oil	petroluem oil	Yellow	2	Insecticide
Stylet Oil	Petroleum distillates	Yellow	2	Insecticide
Sulf-R-Spray	Parafin oil, sulfur	Yellow	2	Fungicide
Superior Spray Oil	petroleum distillates	Yellow	2	Insecticide
Surflan	oryzalin	Yellow	2	Herbicide
Surflan AS	oryzalin	Yellow	2	Herbicide
Termidor SC	Fipronil	Yellow	2	Insecticide
Triact	Neem oil	Yellow	2	Insecticide/Fungicide
Trilogy	Neem oil	Yellow	2	Insecticide/Fungicide
Wasp-Freeze	allethrin	Yellow	2	Insecticide
Wilco Ground Squirrel Bait	diphacinone	Yellow	2	Other
XL 2G	benefin; oryzalin	Yellow	2	Herbicide
All Special Circumstance materials will continue to require exemptions granted by the IPM Advisory Committee, as provided in the City of Santa Barbara IPM Strategy				
Banner-maxx	Propiconazole	S.C.	1	Fingicide
Bayleton	triadimafon triazole	S. C.	1	Fungicide
Daconil	Chlorothalonil	S.C.	1	Fungicide
Fumitoxin	Aluminum phosphide	S. C.	1	Rodenticide
Heritage	Azoxystrobin	S.C.	1	Fungicide
Manage	halosulfuron methyl	S. C.	1	Herbicide
Medallion	fludioxonil	S. C.	1	Fungicide

Product Name	Active Ingredient	ZONE	Tier	Type
Quick Pro	glyphosate/diquat	S. C.	1	Herbicide
Reward	diquat dibromide	S. C.	1	Herbicide
Rubigan	fenarimol	S. C.	1	Fungicide
Rubigan EC	fenarimol	S. C.	1	Fungicide
Subdue	metalaxyl	S. C.	1	Fungicide
Trimmit 2SC	Paclobutrazol	S.C.	1	Growth Regulator
Zp Rode	zinc phosphide	S. C.	1	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.