



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

**DRAFT 2011 Annual Report**

**Prepared March 2012**



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[http://www.santabarbaraca.gov/Resident/Community/Parks\\_and\\_Beaches/Integrated\\_Pest\\_Management.htm](http://www.santabarbaraca.gov/Resident/Community/Parks_and_Beaches/Integrated_Pest_Management.htm)



## TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>II.</b>	<b>PROGRAM SUMMARY .....</b>	<b>3</b>
<b>III.</b>	<b>PEST PROBLEMS ENCOUNTERED .....</b>	<b>5</b>
<b>IV.</b>	<b>TOTAL PESTICIDE USE.....</b>	<b>6</b>
<b>V.</b>	<b>EXEMPTIONS.....</b>	<b>17</b>
<b>VI.</b>	<b>2011 ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2011 .....</b>	<b>18</b>
<b>VII.</b>	<b>EFFECTIVENESS OF ALTERNATIVE PRACTICES IMPLEMENTED .....</b>	<b>20</b>
<b>VIII.</b>	<b>PROPOSED CHANGES TO PEST MANAGEMENT PRACTICES .....</b>	<b>21</b>
<b>IX.</b>	<b>CONCLUSION.....</b>	<b>22</b>
<b>X.</b>	<b>ATTACHMENTS.....</b>	<b>23</b>
	<b>A. ATTACHMENT A: APPROVED MATERIALS LIST 2011 .....</b>	<b>23</b>

## **I. INTRODUCTION**

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 2011 Annual Report discusses the Pesticide Hazard And Exposure Reduction (PHAER) Zone System adopted by the City Council in February 2006. This is the eighth Annual Report for the program.

### **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 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 Pest Management Strategy.

In 2011, the Citizen IPM Advisory Committee met three times to discuss and act on IPM policies and practices. The 2011 Citizen IPM Advisory Committee included the following representatives:

- Greg Chittick, community at large
- Oscar Carmona, community at large
- Kristen LaBonte, community at large
- Christina McGinnis, Environmental Defense Center
- Corey Welles, Pesticide Awareness and Alternative Coalition

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 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 overall IPM Coordinator, under the leadership of the Parks and Recreation Department.

## **IPM Advisory Committee Dissentions**

In 2011, there were no IPM Advisory Committee dissentions. A dissention is when a vote is not unanimous.

## II. 2011 PROGRAM SUMMARY

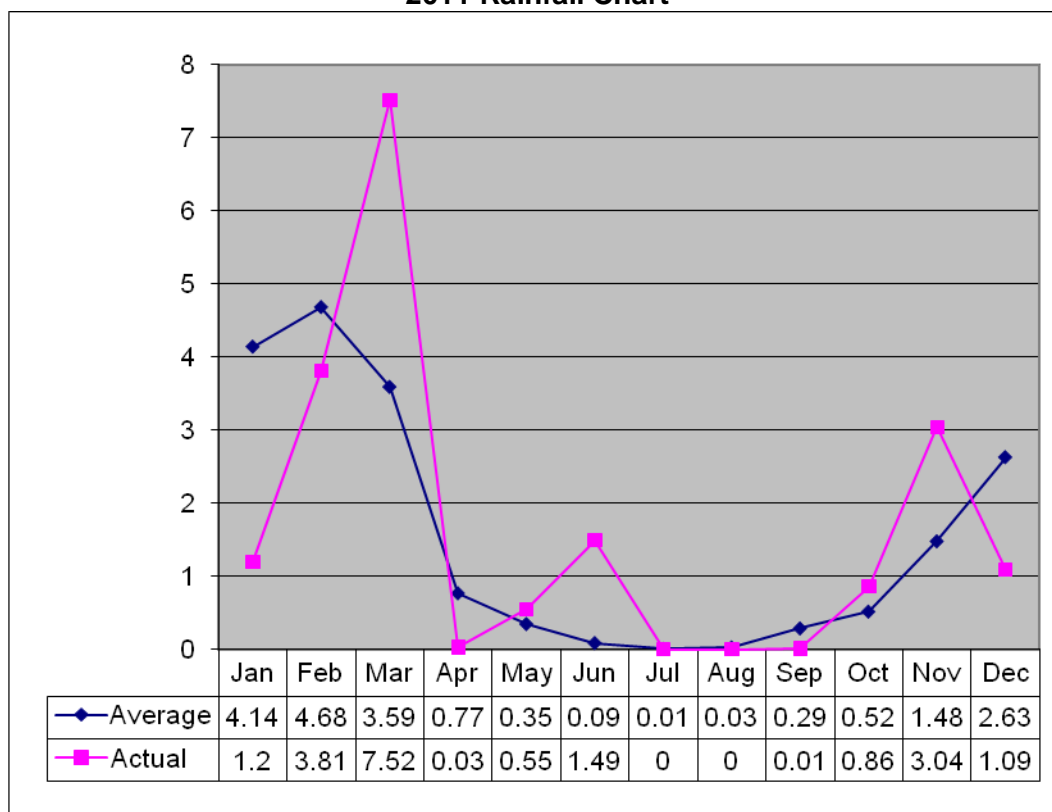
Overall pesticide use decreased from 3,983.2 units in 2010 to 3,277.3 units in 2011. The use of Green materials increased from 2,060.5 units to 2,461.4 units. The use of Yellow materials decreased from 1,633.4 units to 808.9 units. The use of Red materials decreased from 289.3 units to 7.06 units. The vast majority of the increase in Green materials is from the control of mosquitoes. The control of mosquitoes accounted for 94% of all the pesticides used City-wide in 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.

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 significantly higher than normal rainfall experienced in March.

**2011 Rainfall Chart**



## **City-Wide**

- The total units of pesticides applied decreased from 3,983.2 in 2010 to 3,277.3 in 2011.
- Units of Green materials increased from 2,060.5 to 2,461.4.
- Units of Yellow materials decreased from 1,633.4 to 808.9.
- Units of Red materials decreased from 289.3 to 7.06.
- The number of times pesticides were applied (including Green, Yellow, and Red materials) increased from 186 to 212.

## **Airport Department**

- The units of pesticides applied decreased from 2,978.7 in 2010 to 2,539 in 2011.
- Units of Green materials increased from 1,168.9 to 1,755.
- Units of Yellow materials decreased from 1,530.9 to 783.9.
- Units of Red materials decreased from 278.9 to zero.
- The Airport spent 5,140 hours in alternative methods of pest control and spread 280 yards of mulch in planter areas.

## **Golf Division, Parks and Recreation Department**

- The units of pesticides applied increased from 16.6 in 2010 to 17.7 in 2011.
- Units of Green materials increased from .25 to .28.
- Units of Yellow materials increased from 6.0 to 10.4.
- Units of Red materials decreased from 10.4 to 7.06.
- The golf course continues to brew microorganisms and compost tea for the greens.

## **Parks Division, Parks and Recreation Department**

- The units of pesticides applied increased from 8.3 in 2010 to 9.23 in 2011.
- Units of Green materials decreased from 1.9 to zero.
- Units of Yellow materials increased from 6.4 to 9.23.
- No Red materials were applied.
- 840 yards of mulch was spread.

## **Public Works Department**

- The units of pesticides applied decreased from 979.6 in 2010 to 711.3 in 2011.
- Units of Green materials decreased from 889.5 to 706.
- Units of Yellow materials decreased from 90.1 to 5.3.
- No Red materials were applied in 2011.
- Public Works used no rodenticides, using only traps instead.

### III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2011 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			✓	✓ <sup>3</sup>	3		
	Disease	✓		1 <sup>1</sup>	✓ <sup>4</sup>	✓		
Specimen Tree Pests	Oak Worm	✓			✓	2		
	Psyllids				✓			
Weeds	Invasives	✓	✓	3 <sup>2</sup>	1 <sup>5</sup>			
	General weeds	3	✓	✓	1	1	✓	3
	Perennial grasses	✓	✓	✓	1 <sup>6</sup>		✓	✓
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.



## **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. 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.

It should also be noted that due to the change in 2006 from the Tier system to the PHAER Zone 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 - 2011 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 ninth 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 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 overall 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 2011, mainly because of the reduced use of Yellow materials to manage mosquito populations throughout the City. Pesticides applied decreased from 3,983.2 units in 2010 to 3,277.3 in 2011. The use of Green materials increased from 2,060.5 units to 2,461.4 units. The use of Yellow materials decreased from 1,633.4 units to 809.9 units, and Red materials decreased from 289.3 units to 7.06 units. The control of mosquitoes accounted for 94% of all the pesticides used City-wide in 2011.

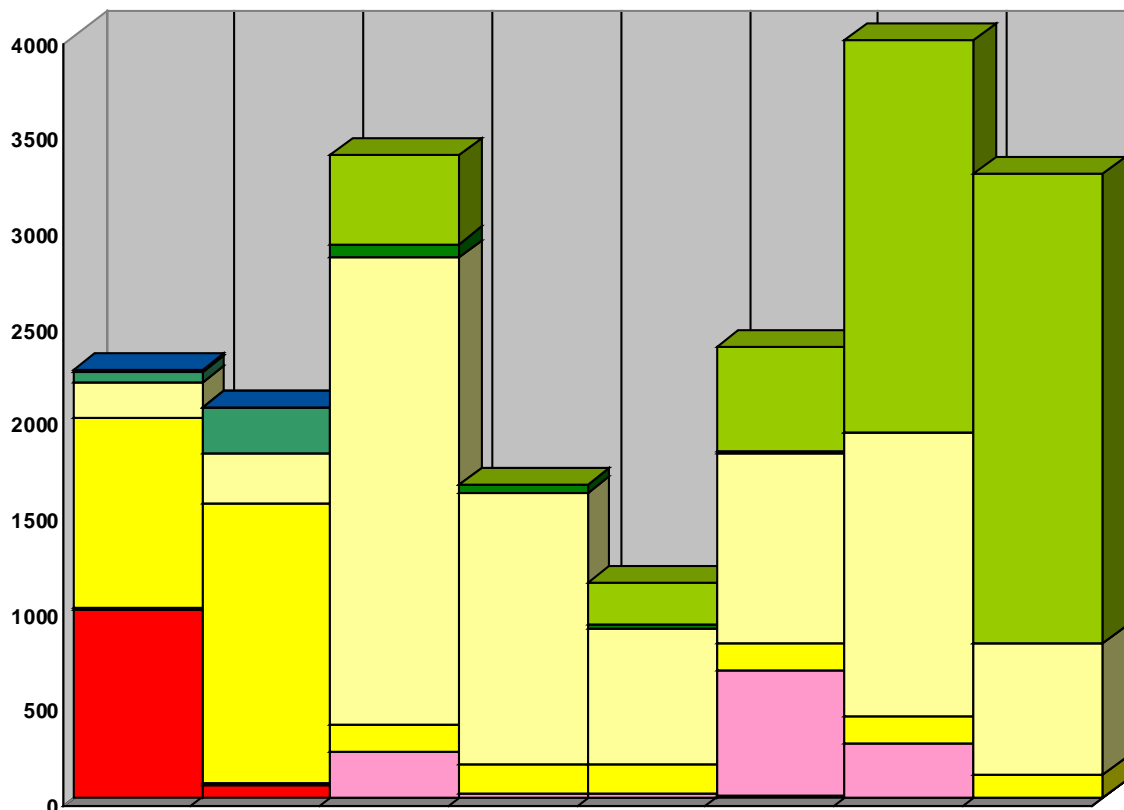
The table below provides a summary of the pesticides applied on City property in 2011. Pesticides are reported in either pounds or gallons depending on whether they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and 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		Applications				
			Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Airport	Golf	Parks and Recreation	Public Works	
Acelepryn	Chlorantraniliprole	Insecticide			0.25								1		
Natular	Spinosad	Larvicide		601.4								2			
Primo Maxx	Trinexapac-ethyl	Regulator			0.03								2		
Vectobac G	Bti	Insecticide		1,153.20					236	44					17
VectoLex CG	B. sphaericus	Insecticide		0.5					470	2					7
<b>Green Totals</b>			0	1,755.10	0.28	0	0	0	0	706	48	3	0	24	
Advion Roach Gel	Indoxacarb	Insecticide							0.08						2
Advion Insect Granuals	Indoxacarb	Insecticide							5.25						2
Affirm	Polyoxin Zinc	Fungicide				9.6						2			
Altosid XR-B	Methoprene	Insecticide		628.55							6				
Aquamaster	Glyphosate	Herbicide					0.75							8	
Ditrac	Diphacinone	Rodenticide		9.25							6				
Rose Defense	Neem Oil	Insecticide						2.1						3	
Round-up Pro Max	Glyphosate	Herbicide	75.13		0.5		3.68				22	4	34		
Surflan	Oryzalin	Herbicide	30								4				
Termidor SC	Fipronil	Insecticide							0.01						1
Trimmit 2SC	Pacllobutrazol	Regulator			0.28							5			
Wasp Freeze	Alethrin	Insecticide					2.7							20	
Wilco Squirrel Bait	Diphacinone	Rodenticide		41							10				
<b>Yellow Totals</b>			105.13	678.8	0.78	9.6	9.23	0	0.09	5.25	48	11	65	5	
Banner-maxx	Propiconazole	Fungicide			0.95								2		
Daconil	Chlorothalonil	Fungicide			2.75								2		
Heritage	Azoxystrobin	Fungicide			0.3								3		
Medallion	Fludioxonil	Fungicide				3.06							1		
<b>Red Totals</b>			0	0	4	3.06	0	0	0	0	0	8	0	0	
<b>Department Totals</b>			105.13	2,433.90	5.06	12.66	9.23	0	0.09	711.25	96	22	65	29	
<b>City-wide Totals:</b>			<b>Gallons</b>	<b>119.51</b>	<b>Pounds</b>	<b>3,157.81</b>					<b>Applications</b>		<b>212</b>		

## City-wide Pesticide Use



	2004	2005	2006	2007	2008	2009	2010	2011
<b>PHAER</b>								
Green Pounds			489.05	.5	220	549.5	2,058.25	2,461.10
Green Gallons			48.5	42.96	19.01	10	2.235	0.28
Yellow Pounds			2,449.91	1,421.95	717.132	993.38	1,485.31	693.65
Yellow Gallons			135.65	149.08	150.458	140.53	148.11	115.23
Red Pounds			246.93	30.56	16.201	656.28	281.95	3.06
Red Gallons			3.75	1.25	9.191	19.73	7.31	4
<b>History</b>								
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	1,469.03						
Tier 1 Gallons	5.5	9						
Tier 1 Pounds	995.9	70						
<b>Totals</b>	<b>2253</b>	<b>2,056.26</b>	<b>3,373.79</b>	<b>1,646.30</b>	<b>1,131.992</b>	<b>2,369.40</b>	<b>3,983.165</b>	<b>3,277.32</b>

## **Parks Division Pesticide Use**

Pesticide use by the Parks Division increased in 2011. The use of Green materials decreased from 1.9 units to zero due primarily to mosquito controls being applied by Environmental Services rather than Parks staff. There was an increase in Yellow materials from 6.4 units to 9.23 units due to heavy spring rains, requiring added weed management in street islands, and rose disease management at the A.C Postel Memorial Rose Garden. No Red materials were used this year on any parkland.

## **Alternatives Used**

The Parks Division performed 7,316 hours of alternative pest management. The Parks Division used a weed flamer on sidewalk cracks and rocky areas as well as applying 840 yards of mulch and biosolids in planter areas. As in years past, the majority of alternative hours were in hand-weeding and hoeing, and mechanical weeding with power equipment.

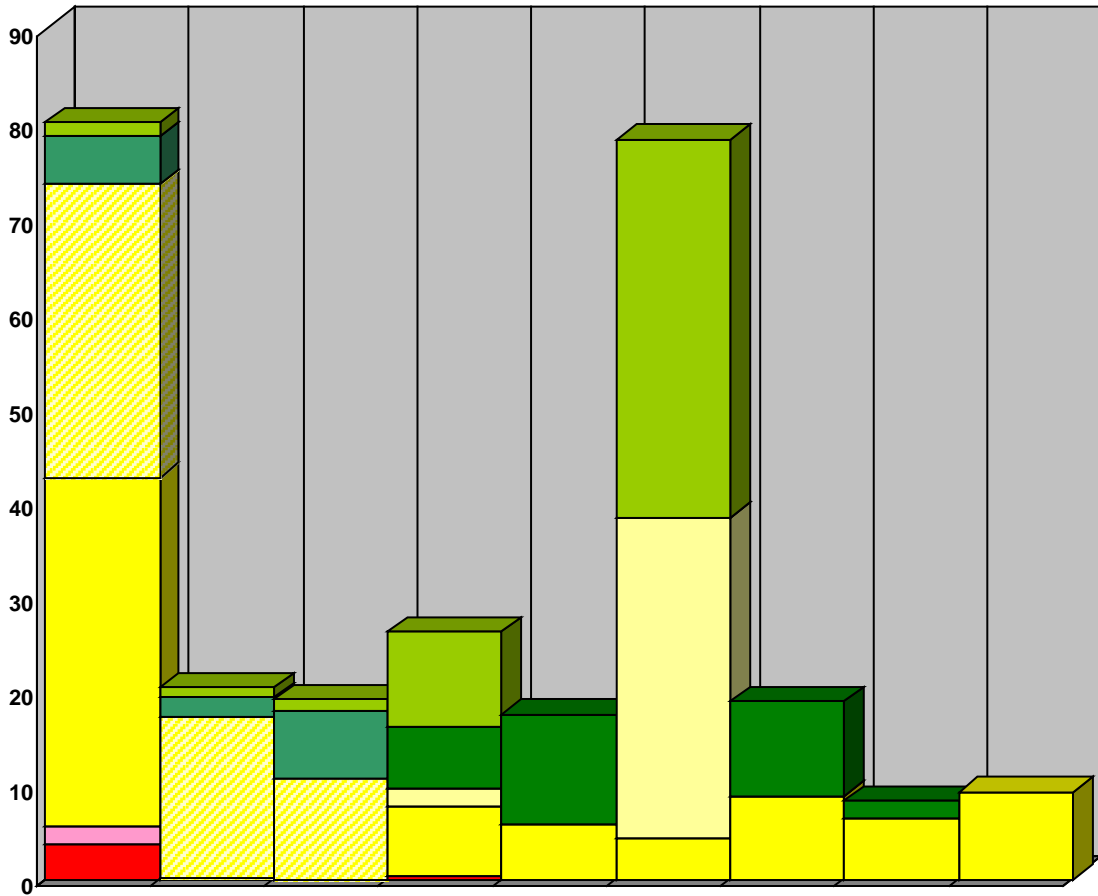
Various other alternatives were practiced in 2011, including trapping for mice, rats, and squirrels and the continued use of worm castings and the beneficial fungus mycorrhizae. The Parks Division also continues to search for alternative herbicides in hopes of finding effective products.

This year has seen historic levels of gopher activity in the park system, and we expect it to continue into 2012. The Parks Division has significantly increased gopher trapping activities to try and minimized damage to the turf and planter areas that are affected.

## **Exemptions**

The Parks Division applied for one exemption. The exemption request was for the use of Glyphosate at Shoreline Park to eradicate invasive arundo on cliff-side areas inaccessible to power equipment. This exemption was granted and used successfully.

## Parks Division Pesticide Use



	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>PHAER</b>									
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	9.23
Red Pounds									
Red Gallons				0.25					
<b>History</b>									
Tier 4 Gallons									
Tier 4 Pound									
Tier 3 Gallons	1.5	1	1.25						
Tier 3 Pounds	5.05	2	7						
Tier 2 Gallons	31	17	10.71						
Tier 2 Pounds	37								
Tier 1 Gallons	1.7	0.22							
Tier 1 Pounds	3.8								
<b>Totals</b>	<b>80.05</b>	<b>20.22</b>	<b>18.96</b>	<b>26.18</b>	<b>17.42</b>	<b>78.24</b>	<b>7.38</b>	<b>8.3</b>	<b>9.23</b>

### **Golf Division Pesticide Use**

The Golf Division increased its material use from 16.6 units in 2010 to 17.7 units in 2011. Although there was an increase in Yellow materials from 6.0 units to 10.4 units, there was a decrease in Red materials from 10.4 units to 7 units. Due to a mild and humid summer, the golf course relied on a series of fungicide applications to control a severe outbreak of Anthracnose (*Colletotrichum cereale*) on the greens. The disease pressure would have been far worse were it not for the increased populations of Creeping Bentgrass that have been introduced to the greens. In the past, the golf course would have relied more heavily on red materials to control Anthracnose, but now, there are safer yellow materials that help to control the disease.

### **Alternatives Used**

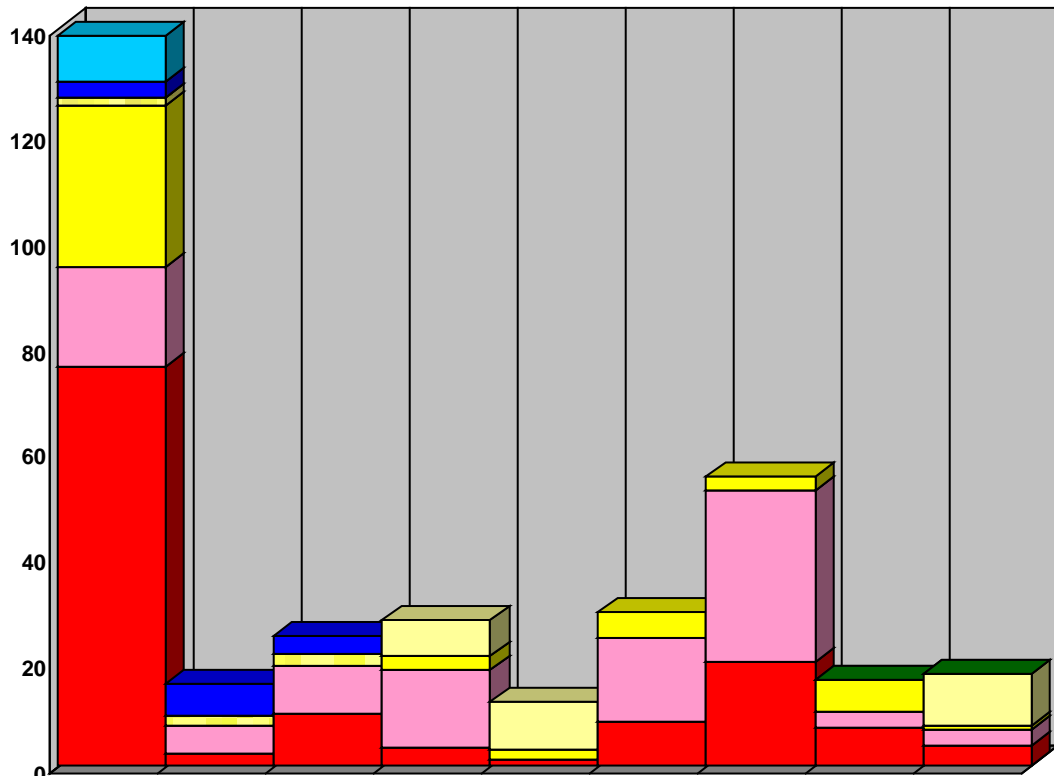
The Golf Division continues to use the “Green” insecticide Acelepryn successfully for Black Turfgrass Ataenius grub control on the greens. Acelepryn is the only grub control product that is not required by the EPA to include a Signal Word on the label.

The Golf Division 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 again reduced, when compared to 2010, by 32% due to these changes. Areas of the putting green surfaces that were damaged from the Anthracnose outbreak were routinely “spiked” and seeded with disease resistant bentgrass. These techniques coupled with the use of seaweed and responsible irrigation practices have increasingly helped to reduce Red and Yellow pesticide use at the Santa Barbara Golf Club.

### **Exemptions**

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

## Golf Division Pesticide Use



	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>PHAER</b>									
Green Pounds									
Green Gallons								0.25	0.28
Yellow Pounds				7	9				9.6
Yellow Gallons				2.31	1.94	4.97	2.75	5.97	0.78
Red Pounds				15		16.06	32.68	3.06	3.06
Red Gallons				3.5	1.25	8.361	19.73	7.31	4
<b>History</b>									
Tier 4 Gallons	8.75								
Tier 4 Pound	3.13	6	3.4						
Tier 3 Gallons									
Tier 3 Pounds									
Tier 2 Gallons	1.4	1.9	2.5						
Tier 2 Pounds	30.84								
Tier 1 Gallons	18.7	5.3	9						
Tier 1 Pounds	76	2.45	10						
<b>Totals</b>	<b>138.82</b>	<b>15.65</b>	<b>24.9</b>	<b>27.81</b>	<b>12.19</b>	<b>29.391</b>	<b>55.16</b>	<b>16.59</b>	<b>17.72</b>

## **Airport Department Pesticide Use**

As in past years, the Airport Department pesticide applications concentrated on three types of pests in 2011: mosquitoes, rodents, and weeds.

### **Mosquitoes**

In 2011, the Airport Department relied on three products to control mosquito populations in the Goleta Slough: Natular XRT, Altosid XR, and BTI. The Airport Department received an exemption to test Natular XRT, a new extended release, Yellow mosquito control material. The test worked well, but costs for the material are higher than other materials. The Airport Department again used Altosid XR, a Yellow extended release larvicide, to control mosquito sources in the Goleta Slough. Large amounts of BTI based Vectobac and Vectolex, both short-term efficacy, Green materials, were applied. The Airport Department has worked with the Mosquito and Vector Management District to rely more heavily on the Green materials.

### **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 2011, the Airport Department used only Yellow diphacinone based materials to control rodents on the airfield. 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. On-going rodent control is necessary to maintain a safe environment for aircraft operations.

Gophers outside the airfield fence were controlled with mechanical 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 was 5,140 hours in 2011.

In 2011, the Airport Department used a beekeeper to remove multiple swarms of bees from the Airport.

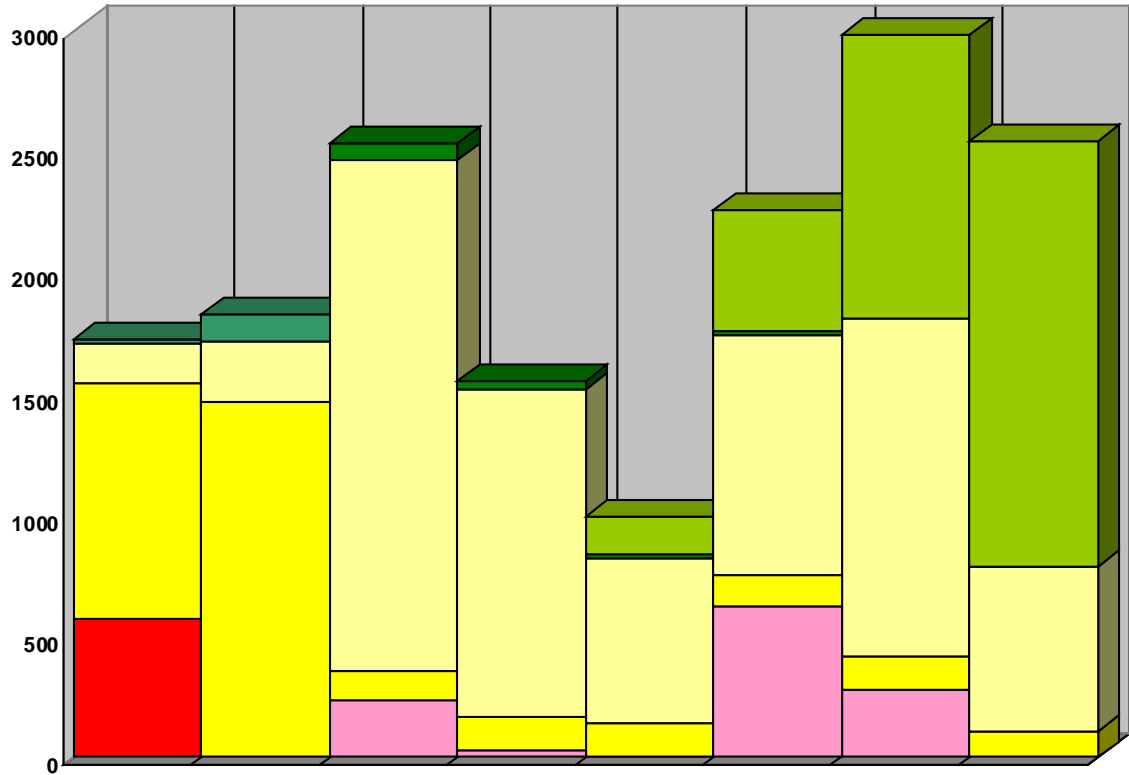
The Airport Department also applied 280 yards of mulch to help control weeds.

## **EXEMPTIONS**

The Airport applied for and received a single exemption in 2011 – Natular XRT. The Natular was used successfully to control mosquitoes.



### Airport Pesticide Use



	2004	2005	2006	2007	2008	2009	2010	2011
<b>PHAER</b>								
Green Pounds			28.5		160	507	1,168.90	1,755.10
Green Gallons			42	31.25	19	9.9		
Yellow Pounds			2,107.31	1,349.95	678.625	993.38	1,395.26	678.8
Yellow Gallons			125.61	140.05	137.855	128	135.65	105.13
Red Pounds			231.93	30.06		623.6	278.89	
Red Gallons					0.75			
<b>History</b>								
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							
<b>Totals</b>	<b>1,723.70</b>	<b>1,831.60</b>	<b>2,535.35</b>	<b>1,551.31</b>	<b>995.480</b>	<b>2,261.88</b>	<b>2,978.70</b>	<b>2,539.03</b>

## **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 decreased its use of pesticides in 2011. Green materials decreased from 889.5 units in 2010 to 706 units in 2011 due to the small reduction in the need for the Green material Bti to treat for mosquitoes. Use of Yellow materials decreased from 90.1 units in 2010 to 5.3 units in 2011, also due to decreased mosquito control. Although the Environmental Services Division oversees mosquito control at multiple sites, the Andrée Clark Bird Refuge receives the majority of material applications for this Division. No Red materials were applied in 2011.

### **Alternatives Used**

The Parking Division used no pesticides in 2011 and continues to use alternative methods for weed control including hand-weeding, weed whip, and limited use of burning with a weed torch. 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 40 on Coast Village Road. The number of rodents caught by mechanical traps on State Street and Coast Village Road totaled 1,631. Alternative use hours for this effort are 1,514.

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 2011, thirty-five hives and/or swarms were relocated with zero loss. The alternative use hours for this effort total 81.

The Streets Division managed weeds with mulch on Carrillo Hill, Milpas Roundabout, and islands at Indio Muerto on the eastside. All other weed abatement throughout the City was performed with hand tools by weekend SWAP crews.

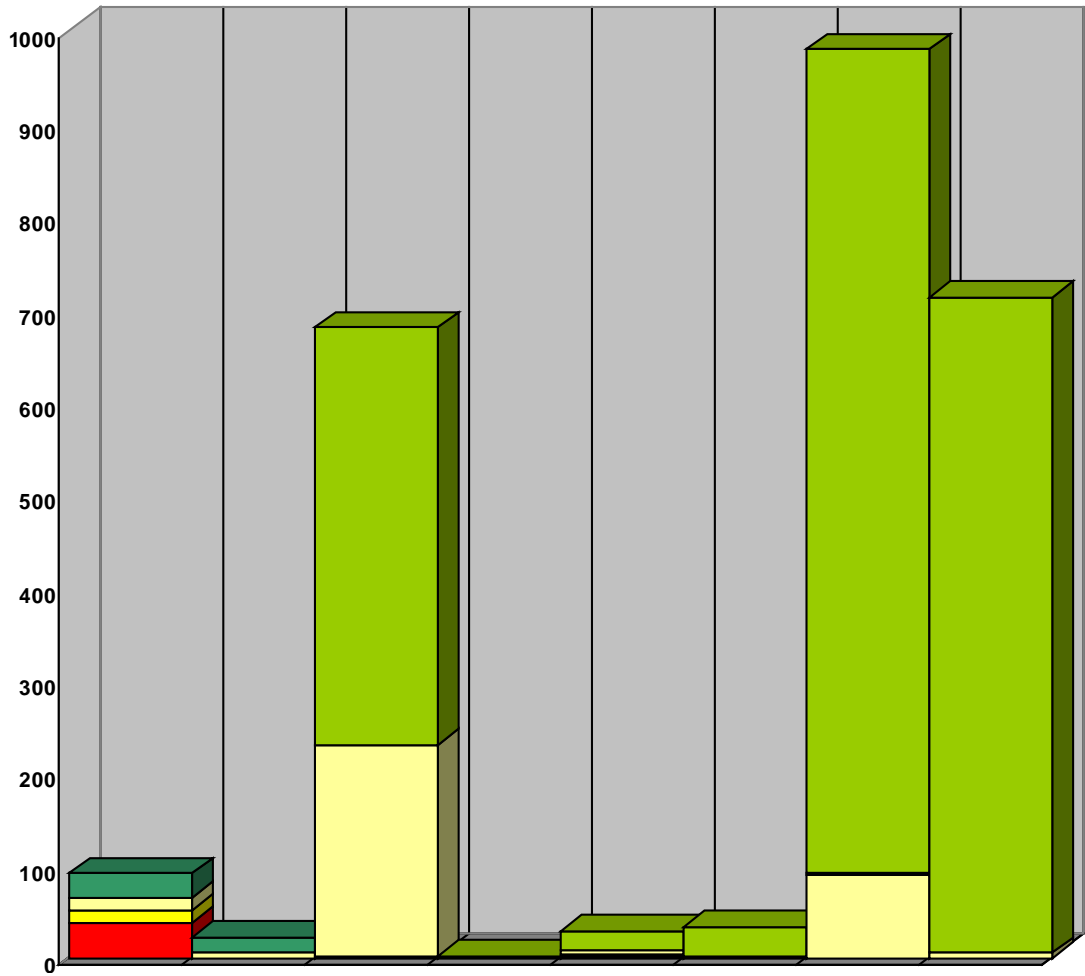
The Facilities Maintenance Division utilized mechanical traps instead of rodenticide for rodent abatement.

### **Exemptions:**

One exemption was applied for in 2011 by Vector Control, which was for the Yellow material Altosid for mosquito control. The exemption was applied for and granted in August of 2011. This was done as a precautionary measure in the event that mosquito populations grew beyond thresholds even with standard applications of the Green material Bti. If this occurred, an immediate application would be necessary. This season, control was met with the use of the Green material only; therefore, Altosid was never used.

The Facilities Division applied for and was granted an exemption for the use of Termidor for ant control at Fire Station #7. This exemption was used successfully.

## Public Works Pesticide Use



	2004	2005	2006	2007	2008	2009	2010	2011
<b>PHAER</b>								
<b>Green Pounds</b>				0.5	20	32.5	889.35	706
<b>Green Gallons</b>			450.55		0.01	0.104	0.11	
<b>Yellow Pounds</b>					4.507		90.05	5.25
<b>Yellow Gallons</b>			228.6	1.38	3.393	1	0.065	0.09
<b>Red Pounds</b>			0.31		0.141			
<b>Red Gallons</b>					0.08			
<b>History</b>								
<b>Tier 4 Gallons</b>								
<b>Tier 4 Pound</b>								
<b>Tier 3 Gallons</b>								
<b>Tier 3 Pounds</b>	27	15.16						
<b>Tier 2 Gallons</b>	13	6.625						
<b>Tier 2 Pounds</b>	14	0.031						
<b>Tier 1 Gallons</b>								
<b>Tier 1 Pounds</b>	37							
<b>Totals</b>	<b>91</b>	<b>21.816</b>	<b>679.46</b>	<b>1.88</b>	<b>28.131</b>	<b>33.6</b>	<b>979.58</b>	<b>711.34</b>

## 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.

- Fourteen exemptions were requested from the IPM Committee in 2011 as summarized in the table to the right and listed in the table below.

- One emergency exemption was requested by Facilities in 2011 and granted by the IPM Coordinator for the use of Termidor for the treatment of ants at the following locations:

- o Cabrillo Bath House
- o Carrillo Recreation Center
- o Fire Station #2
- o Franklin Center
- o West Side Center

- Of the fourteen requests approved, three were not implemented.

**2011 Exemption Summary**

Exemptions	Airport	Env. Serv.	Fire	Facilities	Golf	Parks	Totals
<b>Emergency</b>				1			1
<b>Proposed</b>	1	1	1	1	9	1	14
<b>Passed</b>	1	1		1	9	1	13
<b>Denied</b>			1				1
<b>Applied</b>	1			2	8	1	12
<b>Not Applied</b>		1	1		1		3

**Exemption Detail Table**

Vote	Dept. / Div.	Material	Type	Type	Exemption Type	Used	Site
Passed	Airport	Natular	Insecticide		Programatic	Yes	Slough
Passed	Env. Serv.	Altosid	Insecticide		Programatic	No	Bird refuge
Passed	Facilities	Termidor	Insecticide		One Time	Yes	Fire Station #7
Denied	Fire	Glyphosate	Herbicide		One Time	No	Fire Station #7
Passed	Golf	Acelepryn	Fungicide		Programatic	Yes	Greens
Passed	Golf	Affirm	Fungicide		Programatic	Yes	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	Regulator		Programatic	Yes	Greens
Passed	Golf	Primo Maxx	Regulator		Programatic	Yes	Greens
Passed	Parks	Glyphosate	Herbicide		One Time	Yes	Shoreline Park

**Comparison of Exemptions for 2010 and 2011**

	2010	2011
Number of Exemption Requests	16	15
Number of Exemption Requests Approved	16	14
Number of Approved Exemption Requests Applied	12	12
Number of Approved Exemption Requests Not Applied	4	3

## VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2011

Non-chemical pest management alternatives used in 2011 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 8,326 in 2010 to 15,323 in 2011, primarily due to increased weed control at the Airport.

PEST	Alternative	Airport	Golf	Public Works	Parks	Citywide Hours
WEEDS	Mulch & wood chips	48	✓		460	508
	Weed fabric				✓	0
	Propane flame weeder			52	✓	52
	Hot water/ steam				✓	0
	Hand weeding	750.5	750	235.5	1,819	3,555
	Weed whip	4,307	✓	235	4,500	9,042
	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		✓		225	225
SQUIRRELS	EPA exempt bait					0
	Traps		✓		200	200
	Habitat modification					
RATS & MICE	Mechanical traps	35		1,514	112	1,661
	Cat				✓	0
MOSQUITOES	Mosquito fish				✓	0
	Remove stagnant water				✓	0
BEES	Bee Keepers			81	✓	81
OTHER	Glue traps/roaches					0
	Heat Treatment					0
<b>Total Hours</b>		<b>5,139.5</b>	<b>750</b>	<b>2,117.5</b>	<b>7,316</b>	<b>15,323</b>

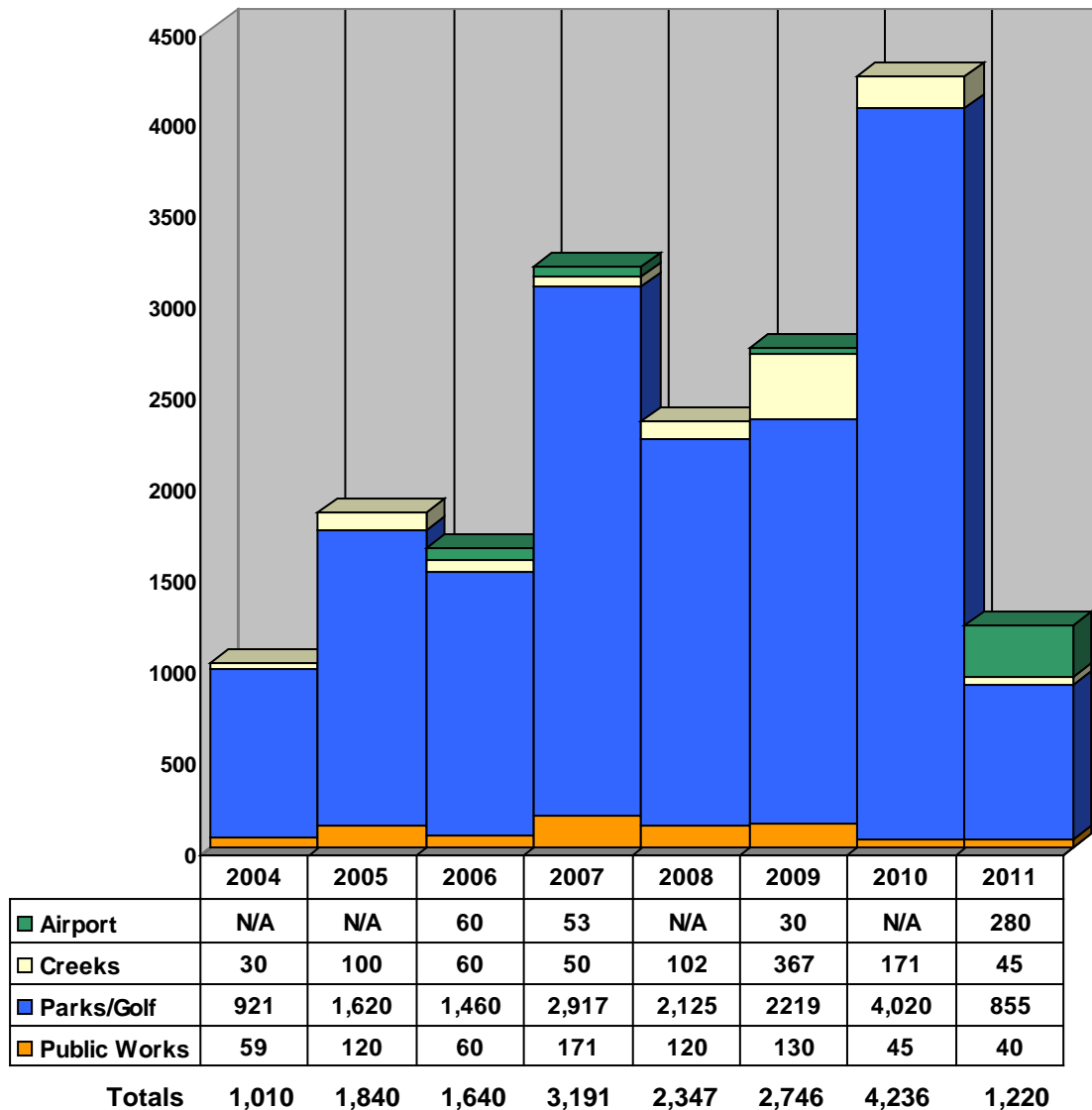
## Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2011.

**Mulch Use Table**

Yards of Mulch by Type	Airport	Creeks	Parks/Golf	Public Works	City Totals
Biosolids			10		<b>10</b>
Woodchips	280	45	845	40	<b>1,210</b>
<b>Total Yards</b>	<b>280</b>	<b>45</b>	<b>855</b>	<b>40</b>	<b>1,220</b>

**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.
- **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, 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.
- **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 2012

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 2012:

- The Parks Division will continue to implement the PHAER Zone system 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.
- 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 2011. The decrease was in Yellow materials, which declined by 50%, and Red materials, which declined by 97%. Green materials rose by 19% primarily due to using Green materials in place of Yellow materials in the treatment of mosquitoes.

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 system.

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
<i>Any brand name</i>	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 / Eugenol	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

Product Name	Active Ingredient	ZONE	Tier	Type
Advion Ant Arena	Indoxacarb	Yellow	2	Insecticide
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	Fungicide
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

Product Name	Active Ingredient	ZONE	Tier	Type
Medallion	fludioxonil	S. C.	1	Fungicide
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.