



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

DRAFT 2009 Annual Report

Prepared February 2010



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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 2009 IPM Annual Report is the sixth 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 2009 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 2009 the Citizen IPM Advisory Committee met seven times to discuss and act on IPM policies and practices and made site visits to Alice Keck Park Memorial Gardens, Chase Palm Park, and Sheffield Open Space to inspect the weed issues in the parks. The 2009 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 2009.

Department IPM Coordinators are appointed by Department Heads to serve on the Staff IPM Committee. Department representatives were: Jeff McKee from the Airport, Michele DeCant 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 2009, there were no IPM Advisory Committee dissentions. A dissention is when a vote is not unanimous.

II. 2009 PROGRAM SUMMARY

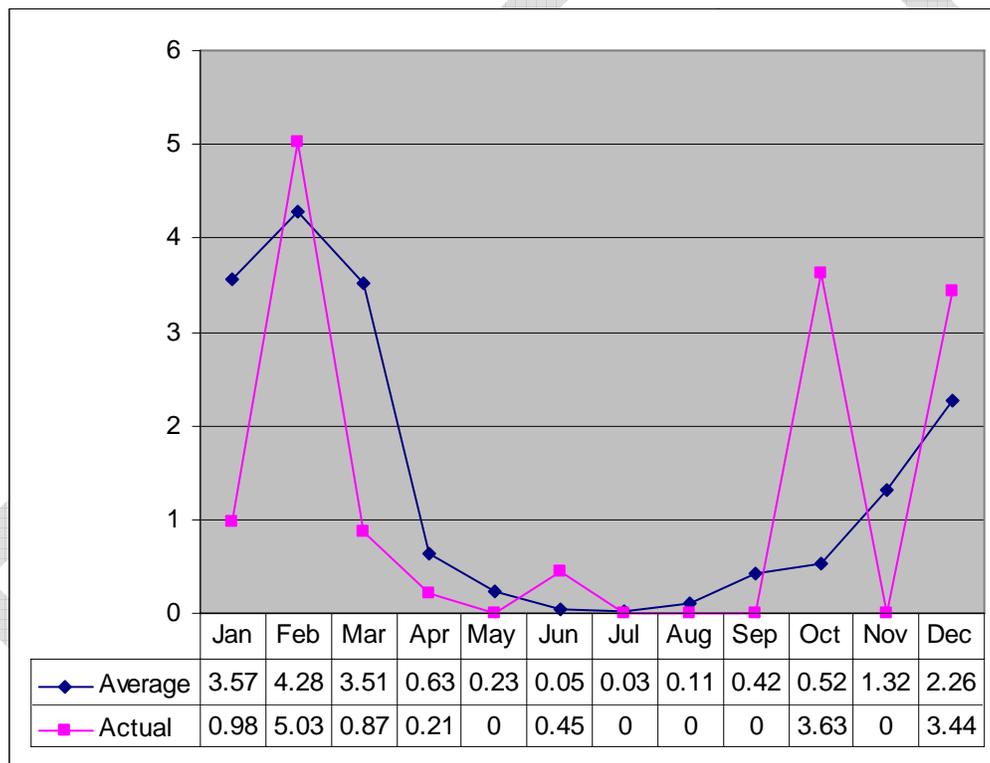
In 2009, pesticide use increased 1,237.5 units, from 1,131.9 units in 2008 to 2,369.4 units in 2009. This includes an increase in the use of Red materials from 25.4 units to 676 units. The use of Yellow materials increased from 867.6 units to 1,133.9 units. The use of Green materials increased from 239 units to 559.5 units.

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 February and December, as well as the record high rainfall in October.

2009 Rainfall Chart



City-Wide

- The total units of pesticides applied increased from 1,131.9 in 2008 to 2,369.4 in 2009.
- Units of Green materials increased from 239 to 559.5.
- Units of Yellow materials increased from 867.6 to 1,133.9.
- Units of Red materials increased from 25.4 to 676.
- The number of times pesticides were applied (including Green, Yellow, and Red materials) increased from 160 in 2008 to 211 in 2009.

Airport Department

- The units of pesticides applied increased from 996.2 in 2008 to 2,261.9 in 2009.
- Units of Green materials increased from 179 in 2008 to 516.9 in 2009.
- Units of Yellow materials increased from 816.5 in 2008 to 1,121.4 in 2009.
- Units of Red materials increased from 0.75 in 2008 to 623.6 in 2009.
- The Airport spent 13,903 hours of manual weed control in PHAER green areas and in native habitat restoration areas and 115.5 hours of mechanical gopher control.

Creeks Division, Parks and Recreation Department

- The units of pesticides applied increased from zero in 2008 to 11.4 in 2009.
- Units of Green materials increased from zero in 2008 to 10 in 2009.
- Units of Yellow materials increased from zero in 2008 to 1.4 in 2009.
- No Red materials were applied.
- 367 yards of mulch was spread.

Golf Division, Parks and Recreation Department

- The units of pesticides applied increased from 29.4 in 2008 to 55.2 in 2009.
- No Green materials were applied in 2009.
- Units of Yellow materials decreased from 5 to 2.7.
- Units of Red materials increased from 24.4 to 52.4.
- The golf course continues to brew microorganisms and compost tea for the greens.
- Two newly constructed greens were seeded with disease resistant bentgrass.

Parks Division, Parks and Recreation Department

- The units of pesticides applied decreased from 78.2 in 2008 to 7.4 in 2009.
- No Green materials were applied in 2009.
- Units of Yellow materials decreased from 38.2 to 7.4.
- No Red materials were applied in 2009.
- Over 1,700 yards of mulch spread.

Public Works Department

- The units of pesticides applied increased from 28.1 units in 2008 to 33.6 in 2009.
- Units of Green materials increased from 20 to 32.6.
- Units of Yellow materials decreased from 7.9 to 1.
- No Red materials were applied in 2009.

Waterfront Department

- No pesticides were applied in 2009.

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III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2009 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. 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 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 - 2009 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 seventh 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 2009, mainly because of increased use of both Green and Red materials at the Airport. Pesticides applied increased from 1,131.9 units in 2008 to 2,369.4 units in 2009. The use of Green materials increased from 239 units to 559.5 units. The use of Yellow materials increased from 867.6 units to 1,133.9 units and Red materials increased from 25.4 units to 676 units. The control of mosquitoes accounted for 51% of all the pesticides used City-wide in 2009.

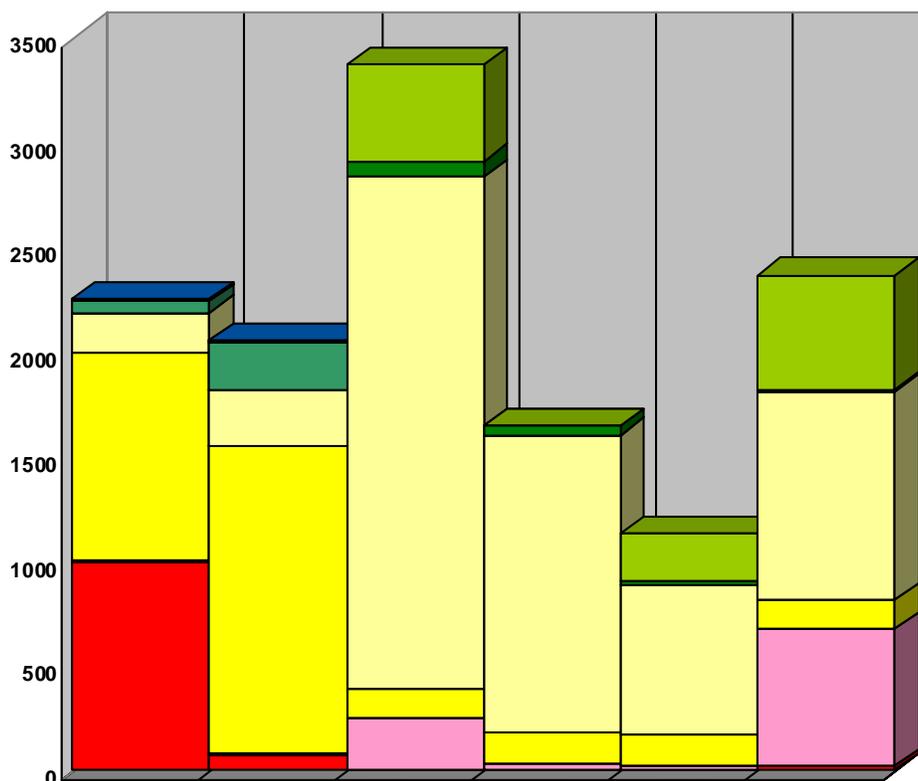
The table below provides a summary of the pesticides applied on City property in 2009. Pesticides are reported in either pounds or gallons depending on if they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and Rodenticide. 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	Amount of Pesticide Applied								Applications			
			Airport		Golf		Parks and Recreation		Public Works		Airport	Golf	Parks and Recreation	Public Works
			Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds				
Advanced Ant Bait	Orthoboric Acid	Insecticide							0.008					1
Borid Turbo	Orthoboric Acid	Insecticide							0.08					1
Burnout II	Clove Oil	Herbicide	9.9								11			
Niban	Isoboric Acid	Insecticide								8				3
Summit Bits	Bti	Insecticide					10		24.5			1		6
Vectobac G	Bti	Insecticide		507							21			
Victor Wasp	Mint Oil / SLS	Insecticide							0.016					1
Green Totals			9.9	507	0	0	0	10	0.104	32.5	32	0	1	12
Altosid Pellets	Methoprene	Insecticide		62							1			
Altosid XR	Methoprene	Insecticide		637.52							6			
Ditrac	Diphacinone	Rodenticide		38.86							20			
Dormant Spray	Petroleum Oil	Insecticide					0.75						1	
Liquicop	Copper Oil	Fungicide					0.25						1	
Rose Defense	Neem Oil	Insecticide					0.62						1	
Round-up Pro	Glyphosate	Herbicide	73		2.75		7.16				17	16	52	
Round-up Pro Max	Glyphosate	Herbicide	25								5			
Surflan	Oryzalin	Herbicide	30								5			
Termidor SC	Fipronil	Insecticide							1					3
Wilco Squirrel Bait	Diphacinone	Rodenticide		55							9			
XL2G	Oryzalin / Benefin	Herbicide		200							1			
Yellow Totals			128	993.38	2.75	0	8.78	0	1	0	64	16	55	3
Banner-maxx	Propiconazole	Fungicide			4.73								5	
Daconil	Chlorothalonil	Fungicide			15								5	
Fumitoxin	Aluminum phosphide	Rodenticide		370.6							10			
Heritage	Azoxystrobin	Fungicide				15							1	
Medallion	Fludioxonil	Fungicide				7.68							3	
Prostar	Flutolanil	Fungicide				10							1	
Vikane	Sulfuryl fluoride	Insecticide		253							3			
Red Totals			0	623.6	19.73	32.68	0	0	0	0	13	15	0	0
Department Totals			137.9	2123.98	22.48	32.68	8.78	10	1.104	32.5	109	31	56	15
City-wide Totals:			Gallons 170.264		Pounds 2,199.160				Applications 211					

City-wide Pesticide Use



	2004	2005	2006	2007	2008	2009
PHAER						
Green Pounds			489.05	.5	220	549.5
Green Gallons			48.5	42.96	19.01	10
Yellow Pounds			2449.91	1,421.95	717.132	993.38
Yellow Gallons			135.65	149.08	150.458	140.53
Red Pounds			246.93	30.56	16.201	656.28
Red Gallons			3.75	1.25	9.191	19.73
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

Parks Division Pesticide Use

Pesticide use by the Parks Division decreased in 2009. No Green materials were applied. There was a decrease in Yellow materials from 38.24 units to 7.38 units primarily from the use of glyphosate to control weeds. No Red materials were used this year on any parkland.

Alternatives Used

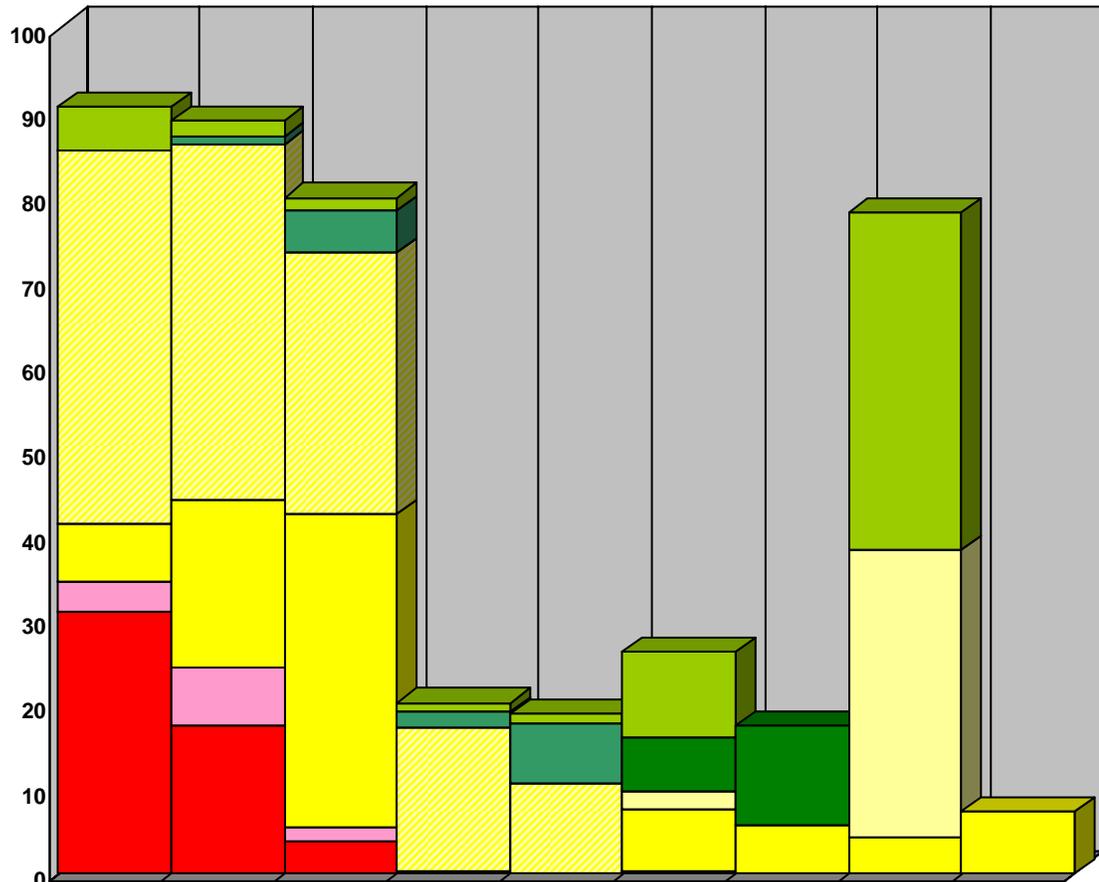
The Parks Division performed 3,979 hours of alternative pest management. The Parks Division used a weed flamer on sidewalk cracks and rocky areas as well as a steam weeder around the palm trees at Chase Palm Park and applied over 1,700 yards of mulch and biosolids in planter areas. The Parks Division 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 2009, including trapping for rodents and the continued use of Sluggo for snail and slug control. A contractor was used to relocate bee hives and yellow jacket nests. The Parks Division also continues to search for alternative herbicides in hopes of finding effective products.

Exemptions

The Parks Division applied for five exemptions. The first exemption request was for the use of Glyphosate at Parma Park to eradicate invasive weeds after the Tea Fire. This exemption was granted but not used due to emergency funds becoming available for the hiring of additional staff to weed manually. The second exemption request was for the use of Glyphosate to treat invasive *Arundo donax* at the Andréé Clarke Bird Refuge. This exemption was granted and used successfully. The third was an exemption request for the use of Glyphosate to treat invasive *Arundo donax* at Shoreline Park. This exemption was granted but not used because of difficulty in safely reaching the cliff-side location. The fourth exemption request was for the use of Glyphosate to treat weeds at Chase Palm Park and Sheffield Open Space. This exemption was declined. The fifth 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 a diminished squirrel population, resulting primarily from the use of diphacinone in 2008.

Parks Division Pesticide Use



	2001	2002	2003	2004	2005	2006	2007	2008	2009
PHAER									
Green Pounds						10		40	
Green Gallons						6.5	11.71		
Yellow Pounds						2		34	
Yellow Gallons						7.43	5.71	4.24	7.38
Red Pounds									
Red Gallons						0.25			
History									
Tier 4 Gallons									
Tier 4 Pound									
Tier 3 Gallons	5.3	1.75	1.5	1	1.25				
Tier 3 Pounds		1	5.05	2	7				
Tier 2 Gallons	44	42	31	17	10.71				
Tier 2 Pounds	7	20	37						
Tier 1 Gallons	3.6	6.7	1.7	0.22					
Tier 1 Pounds	30.91	17.6	3.8						
Totals	90.81	89.05	80.05	20.22	18.96	26.18	17.42	78.24	7.38

Golf Division Pesticide Use

The Golf Division increased its material use from 29.4 units in 2008 to 55.2 units in 2009. Although there was a reduction in Yellow materials from 5 units to 2.7 units, there was an increase in Red materials from 24.4 units to 52.4 units. Due to a drier than normal January, there was a reduction in weed populations leading to a decline in Yellow herbicides used. However, the weather also brought an increase in diseases during the winter and summer months leading to an increased use of Red fungicides. The Golf Division continues to implement alternative agronomic methods to control disease pressures and limit pesticide inputs. Unfortunately, extreme environmental conditions create disease outbreaks that can only be controlled with fungicides.

Alternatives Used

The Golf Division recently rebuilt two greens and selected disease resistant seed. Selecting a disease resistant seed variety will lead to an overall reduction in fungicide use.

The Golf Division increased the use of Biosolids from 315 cubic yards to 455 cubic yards. Biosolids are used as an organic fertilizer which leads to a reduction in the application of inorganic fertilizers.

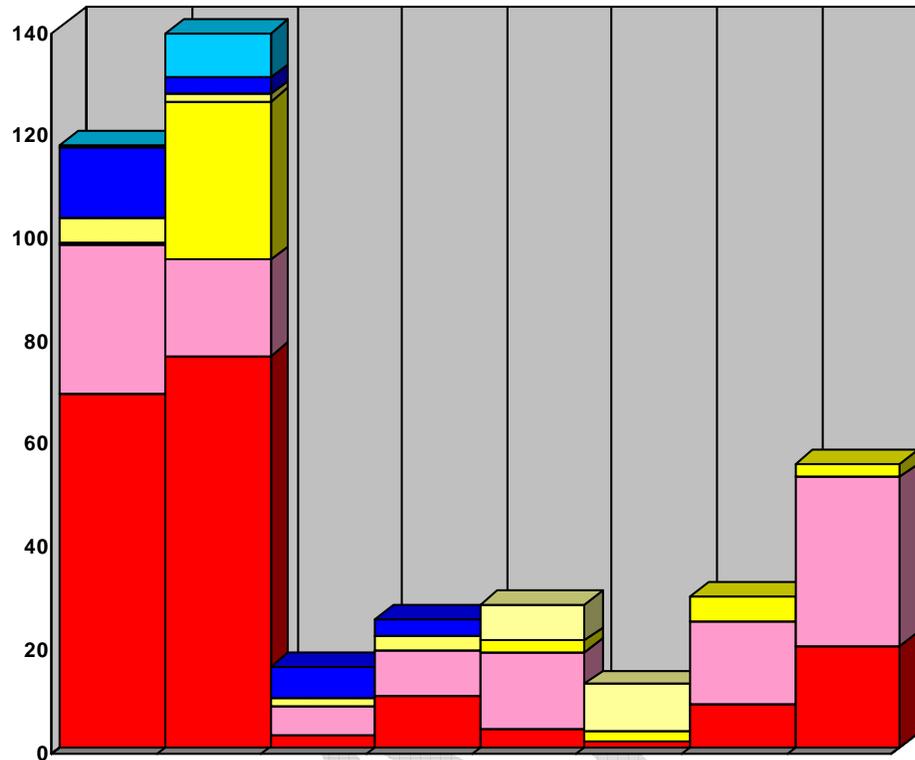
The Golf Division continues to limit the amount of fertilizer applied to the greens. In lieu of fertilizer the Golf Division continues to use raw materials that, over time, will acidify the soil promoting more disease resistant finer leaf turfgrasses. These materials also deliver an acceptable green color that would typically be accomplished with nitrogen inputs.

In all, the Golf Division used 455 cubic yards of Biosolids, 60 gallons of effective microorganisms and 60 gallons of seaweed.

Exemptions

The Golf Division applied for and received eight exemptions. The exemptions were for the fungicides Banner-maxx, Daconil, Heritage, Medallion, and Prostar; the insecticides Acelepryn and Merit, 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
PHAER								
Green Pounds								
Green Gallons								
Yellow Pounds					7	9		
Yellow Gallons					2.31	1.94	4.97	2.75
Red Pounds					15		16.06	32.68
Red Gallons					3.5	1.25	8.361	19.73
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

Airport Department Pesticide Use

The Airport Department pesticide applications concentrated on four types of pests in 2009: mosquitoes, rodents, weeds and termites. The Airport applied Red materials to control gophers on the airfield and drywood termites in two buildings. Red materials were selected by the Airport staff, and exemption requests approved by the IPM Advisory Committee, because those materials were the most appropriate approach to control the problem pests.

Mosquitoes

The Airport Department relies primarily on Altosid XR, a Yellow larvicide to control mosquitoes in the Goleta Slough. The product is effective for up to 180 days. In 2009, generally dry conditions limited the need for reapplication of Altosid XR. 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 for shorter periods of time, in lieu of second applications of Altosid XR. Bti based products are only effective for about ten days.

Weeds

In addition to the extensive manual weed control program at the Airport, herbicides were used to prevent weeds from obscuring airfield lights and signs, and to prevent weeds from deteriorating airfield assets. Some hand weed abatement was conducted on the airfield in 2009; however this effort is limited due to safety considerations for maintenance personnel.

Rodents

Following several years of no significant application of rodenticides on the airfield, the Airport Department made a concerted effort to reduce airfield rodent populations. Rodents on the airfield attract predators that pose a collision hazard for aircraft. The Airport is also 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.

Termites

In 2009, the Airport Department tented two buildings with Vikane to prevent damage from drywood termites. The IPM Advisory Committee approved an exemption for the use of Vikane, a Red material. Vikane was approved by the Advisory Committee in lieu of heat treatment due to large amounts of heat sensitive electronic equipment within the buildings, and the physical size of the buildings. This made them difficult, if not impossible, to heat adequately to achieve control. The initial treatment of one building was unsuccessful and the contractor re-tented the building under warranty. Drywood termites were also discovered in an office inside the Airline Terminal. The drywood termites there were eradicated by a local contractor using heat.

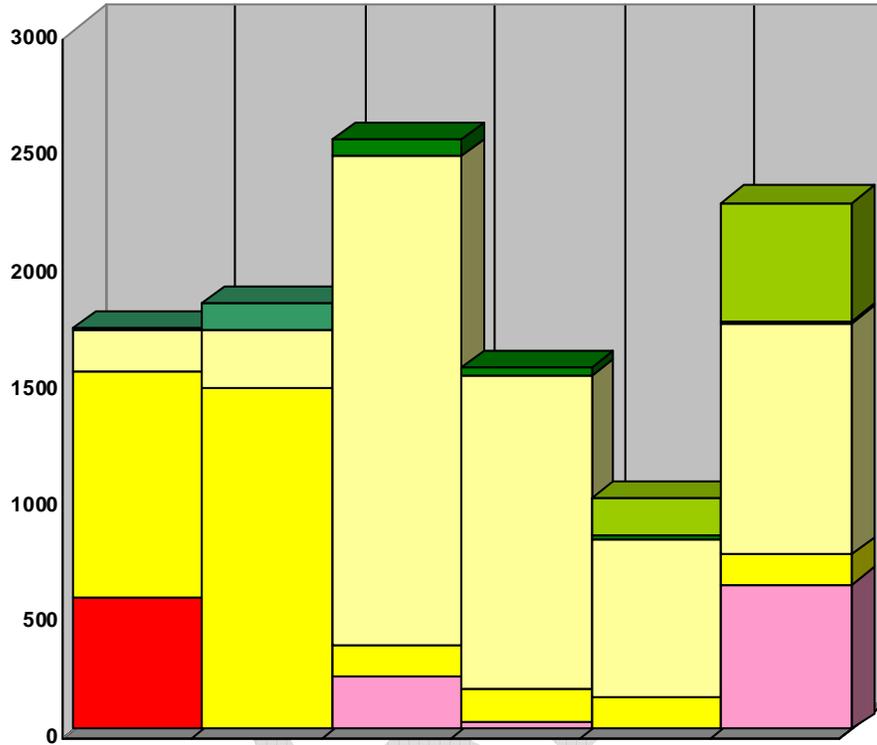
Alternatives Used

Alternative efforts focused on the control of weeds through mechanical methods, including weed whipping, hand weeding and hoeing. The number of hours devoted to alternative pest control methods remained very high at 14,024 hours recorded in 2009. During the year, Airport used a beekeeper to remove multiple swarms of bees from the Airport. Airport used a contractor in December to heat treat an infestation of drywood termites in one section of the Airline Terminal.

EXEMPTIONS

The Airport applied for and received two exemptions in 2009 - Fumitoxin and Roundup Promax. The exemption for Vikane was approved at the end of 2008 for use in 2009. All materials were used.

Airport Pesticide Use



	2004	2005	2006	2007	2008	2009
PHAER						
Green Pounds			28.5		160	507
Green Gallons			42	31.25	19	9.9
Yellow Pounds			2107.31	1,349.95	678.625	993.38
Yellow Gallons			125.61	140.05	137.855	128
Red Pounds			231.93	30.06		623.6
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

Public Works Department Pesticide Use

The Public Works Department increased its use of pesticides in 2009. Green materials increased to 32.6 units in 2009 from 20.01 units in 2008 primarily due to the use of the Green material Bti to treat for mosquitoes. Use of Yellow materials decreased to 1 unit in 2009 from 7.9 units in 2008 largely due to reduced rodent baiting. No Red materials were applied in 2009.

Alternatives Used

The Parking Division continues to use alternative methods for weed control including hand weeding, weed whipping, and limited use of weed burning. A total of 365 hours were devoted to non chemical methods of weed control in 2009. In addition, 30 cubic yards of mulch were added to planting areas to discourage weed growth. Additional alternative practices for pest management include plant replacement, worm castings, and washing off insects with water pressure.

Environmental Services employed a contractor who caught 47 rodents in traps along State Street and Coast Village Road. A contractor also relocated 15 bee hives or swarms.

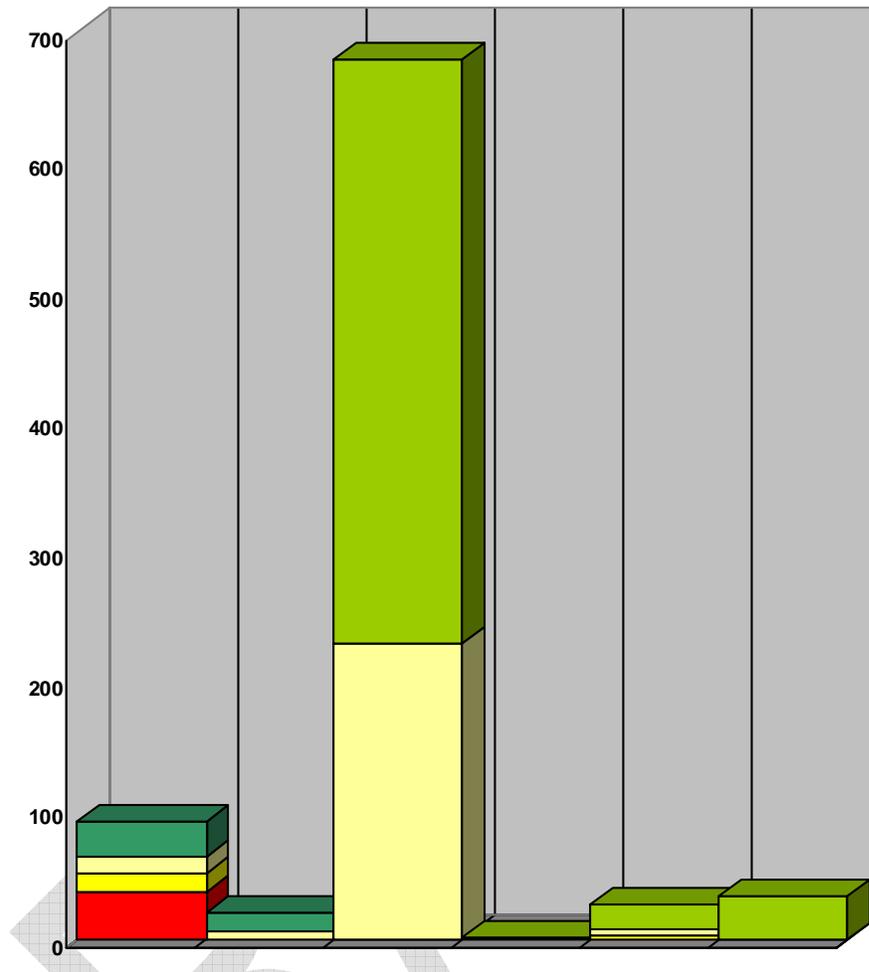
The Streets Division managed weeds in traffic calming areas with hand weeding and mulching.

The Facilities Division focused on sanitation efforts in the management of ants and rodents in City buildings.

Exemptions:

The Public Works Facilities Maintenance Division applied for and received two exemptions for the Yellow materials Fipronil and Advion, both for the control of ants in and around City facilities.

Public Works Pesticide Use



	2004	2005	2006	2007	2008	2009
PHAER						
Green Pounds				0.5	20	32.5
Green Gallons			450.55		0.01	0.104
Yellow Pounds					4.507	
Yellow Gallons			228.6	1.38	3.393	1
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 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.

- 17 exemptions were requested in 2009 as summarized in the table to the right and listed in the table below.
- No emergency exemptions were requested in 2009.
- All 17 requests were for planned action and 16 were granted by the IPM Citizens Advisory Committee.
- Of the 16 requests approved, 7 were not implemented.

Exemption Summary Table

2009 Exemptions	Airport	Creeks	Golf	Parks	Facilities	Totals
Emergency						
Proposed	1	1	8	5	2	17
Passed	1	1	8	4	2	16
Denied				1		1
Applied	1	1	5	1	1	9
Not Applied			3	4	1	8

Exemption Detail Table

Vote	Div.	Material	Type	Type	Exemption Type	Used	Site
Passed	Airport	Fumitoxin	Rodenticide	Red	Programatic	Yes	Airfield
Passed	Creeks	Glyphosate	Herbicide	Yellow	Programatic	Yes	Golf Course
Passed	Facilities	Fipronil	Insecticide	Yellow	Programatic	Yes	Franklin Center
Passed	Facilities	Advion	Insecticide	Yellow	Programatic	No	Facilities
Passed	Golf	Banner-maxx	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Acelepryn	Insecticide	Red	Programatic	No	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	Prostar	Fungicide	Red	Programatic	Yes	Greens
Passed	Golf	Trimmit	Herbicide	Red	Programatic	No	Greens
Passed	Parks	Diphacinone	Rodenticide	Yellow	Programatic	No	Shoreline Park, Leadbetter, Chase Palm
Passed	Parks	Glyphosate	Herbicide	Yellow	Programatic	No	Parma Park
Passed	Parks	Glyphosate	Herbicide	Yellow	Programatic	Yes	Bird Refuge
Declined	Parks	Glyphosate	Herbicide	Yellow	Programatic	No	Chase Palm Park and Sheffield Open Space
Passed	Parks	Glyphosate	Herbicide	Yellow	One Time	No	Shoreline Park

Comparison of Exemptions for 2007 and 2008

	2008	2009
Number of Exemption Requests	16	17
Number of Exemption Requests Approved	15	16
Number of Approved Exemption Requests Applied	8	9
Number of Approved Exemption Requests Not Applied	7	7

VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2009

Non-chemical pest management alternatives used in 2009 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 23,569 in 2008 to 19,936 in 2009, primarily due to budgetary reductions resulting in less available labor.

PEST	Alternative	Airport	Golf	Public Works	Parks	Citywide Hours
WEEDS	Mulch & wood chips	8	✓	✓	560	568
	Weed fabric					0
	Propane flame weeder			✓	64	64
	Hot water/ steam				8	8
	Hand weeding	13,601	300	165	1,602	15,668
	Weed whip	294	1,200	200	1,300	2,994
	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	116	✓		421	537
SQUIRRELS	EPA exempt bait					0
	Traps		✓		24	24
	Habitat modification			✓		
RATS & MICE	Mechanical traps	2		✓	✓	2
	Cat				✓	0
MOSQUITOES	Mosquito fish	✓		✓		0
	Remove stagnant water				✓	0
BEES, WASPS, etc.	Bee Keepers			✓	✓	0
	Remove hives	✓		68	✓	68
OTHER	Glue traps/roaches			✓		0
	Heat Treatment	4		✓		4
Total Hours		14,024	1,500	433	3,979	19,936

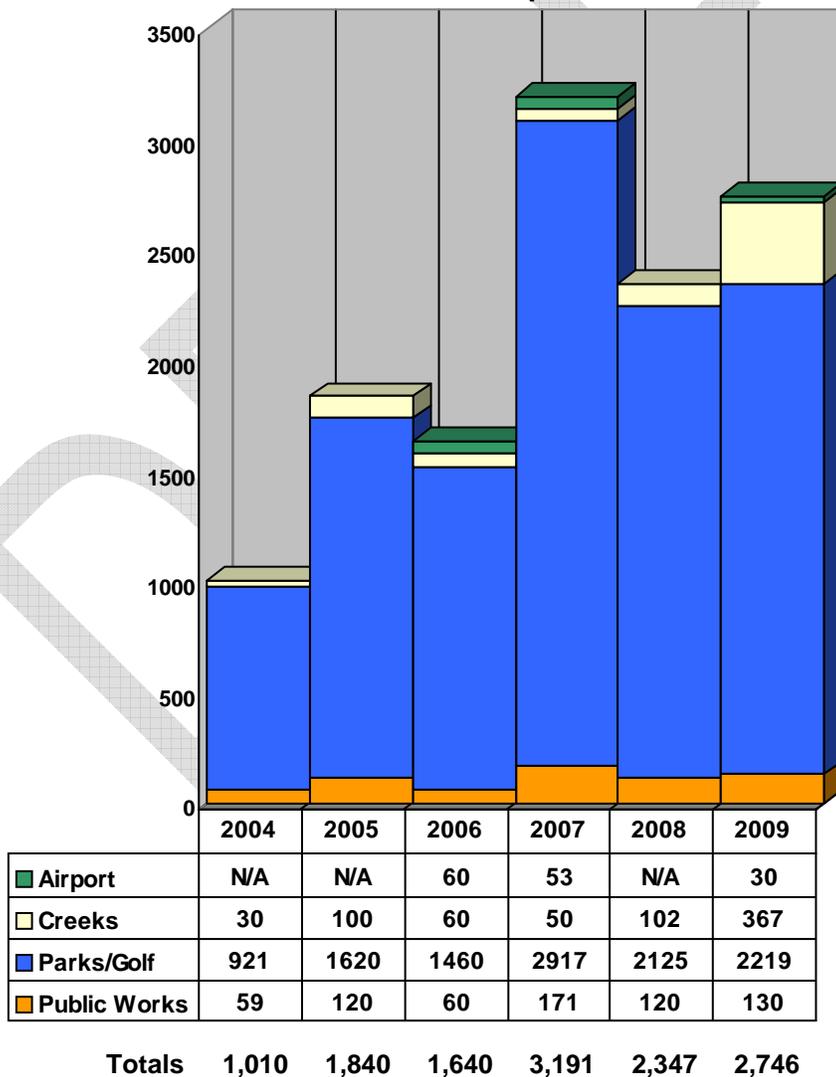
Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2009.

Mulch Use Table

Yards of Mulch by Type	Airport	Creeks	Parks/Golf	Public Works	City Totals
Biosolids			559		559
Woodchips	30	367	1,660	130	2,187
Total Yards	30	367	2,219	130	2,746

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, flame torch (in designated safe areas), and the Aquacide Steam Weeder. 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
- **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. More effective alternatives are being researched. 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 only uses heat treatments to control drywood termites. Heat was found to be equally effective as pesticides and without the chemical residues. However, costs are 50% higher at this time.

VIII. PROPOSED CHANGES TO PEST MANAGEMENT PRACTICES

Alternative Practices Proposed for 2010

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 five 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 limit the amount of fertilizer applied to the greens. In lieu of fertilizer the Golf Division will use raw materials that, over time, will acidify the soil promoting more disease resistant finer leaf turfgrasses. These materials also deliver an acceptable green color that would typically be accomplished with nitrogen inputs.
- The Airport Department landscape maintenance contractor has identified specific initiatives for 2010 to further improve the effectiveness of its IPM efforts in Airport Green zones. Efforts will focus on plant health, conservation of water resources and recycling of green waste. The contractor has also committed to have two staff certified as Green Gardeners during the coming fiscal year.

IX. CONCLUSION

Overall, the City increased its use of pesticides in 2009. The increased use of Red materials to treat termites and gophers at the Airport, and funguses at the Golf Course caused a City-wide increase to 2,369.4 units in 2009 from 1,131.9 units in 2008. The City also saw an increase in the use of Green materials, in particular, the use of Bti to control mosquitoes at the Airport.

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.

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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
Advance Ant Bait	Orthoboric Acid	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	Orthoboric Acid	Green	3	Insecticide
Borid Turbo	Orthoboric Acid	Green	3	Insecticide
BurnOut 2	clove oil	Green	3	Herbicide
Cinnamite	cinnamaldehyde	Green	3	Insect/Fung
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 4.5% Eugenol (clove oil) 1.75%	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
Agnique MMF	POE Isoocatadecanol	Yellow	2	Insecticide
Aliette	fosetyl aluminum	Yellow	2	Fungicide
Altosid B	methoprene	Yellow	2	Other

Product Name	Active Ingredient	ZONE	Tier	Type
Altosid L	methoprene	Yellow	2	Other
Altosid P	methoprene	Yellow	2	Other
Altosid XR	methoprene	Yellow	2	Other
Aquamaster-Rodeo	glyphosate	Yellow	2	Herbicide
Avid	abamectin	Yellow	2	Miticide/Insecticide
Dormant	petroleum oil	Yellow	2	Insecticide
Green Light	Neem oil	Yellow	2	Insecticide/Fungicide
M-PEDE	potassium salts of fatty acids	Yellow	2	Insecticide
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	petroleum oil	Yellow	2	Insecticide
Stylect Oil	Petroleum distillates	Yellow	2	Insecticide
Sulf-R-Spray	Paraffin 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	benfenin; oryzalin	Yellow	2	Herbicide
<i>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</i>				
Bayleton	triadimafon triazole	S. C.	1	Fungicide
Conserve	spinosad	S. C.	1	Insecticide
Fumitoxin	Aluminum phosphide	S. C.	1	Rodenticide
Manage	halosulfuron methyl	S. C.	1	Herbicide
Medallion	fludioxonil	S. C.	4	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
Zp Rode	zinc phosphide	S. C.	1	Rodenticide