



Midpeninsula Regional  
Open Space District

R-13-22  
Meeting 13-11  
May 8, 2013

## STUDY SESSION AGENDA ITEM 1

### AGENDA ITEM

Study Session to Review Draft Integrated Pest Management Policy

### GENERAL MANAGER'S RECOMMENDATION *SM*

Review and approve "in concept" the attached Draft Integrated Pest Management Policy.

### SUMMARY

The attached Draft Integrated Pest Management (IPM) Policy will be the foundation for the further development of the Integrated Pest Management Program. Upon Board adoption of the final IPM Policy (expected in spring 2014), the policy will be incorporated into the District's Resource Management Policies (see Report R-12-05) and will replace the Invasive Species Management chapter (Chapter 4). This IPM Policy will guide the development of the IPM Program and resulting project description for purposes of conducting environmental review over the next year.

### DISCUSSION

The Board of Directors approved the Resource Management Policies on January 11, 2012 (see Report R-12-05). The District is currently developing an Integrated Pest Management (IPM) Program which will comprehensively direct management of all pests on District property. As a result, the IPM Policy will replace the existing Invasive Species Management chapter (Chapter 4) in the Resource Management Policies document.

Staff is working with an IPM consultant team to develop the IPM Program (see Report R-13-06). The consultants reviewed trends and definitions of IPM, examined pest management programs at other land management agencies, and interviewed District staff to define an IPM Program that matches the District's land management goals.

The Draft IPM Policy includes the following definition of integrated pest management:

IPM is a long-term, science-based decision-making system that uses a specific methodology to manage damage from pests. This methodology contains the following elements:

- Correctly identify the pest and understand its life cycle;

- Determine and map the extent of the problem or infestation;
- Establish tolerance levels for control actions;
- Utilize the least toxic suite of management tactics to control the pest at the most vulnerable stages of its life cycle; and
- Monitor populations and effectiveness of control methods.

IPM requires the assessment of pest control alternatives and the monitoring of site conditions to effectively control a target pest with minimum impact to human health, the environment, and non-target organisms. IPM can be used for many types of pests and situations, including invasive species, structural and agricultural pests, and other problem pest species (e.g., rattlesnakes and stinging insects).

IPM requires knowledge of the biology of pests, the available techniques for controlling them, and understanding of the secondary effects of the control techniques (such as soil erosion or pesticide drift or bioaccumulation). Control of a pest is only undertaken once a tolerance level has been exceeded. The effectiveness, safety, and efficiency of control methods are important considerations as they apply to the specific site conditions and life history of the target pest. IPM requires monitoring site conditions before, during, and after treatment to determine if objectives are being met and if methods need to be revised. IPM requires that the most effective, least toxic method be used to obtain the desired level of control. If pesticides are necessary to meet a pest control objective, the potential for harm to workers and the public must be carefully considered, as are effects on the environment, and then the least toxic and most effective, efficient, and target-specific pesticide is chosen.

Within the District, the situations that trigger the need for pest control fall into four distinct categories:

- management of *natural areas* for the long-term preservation of natural resources;
- management of *highly modified areas* (e.g., offices, residential buildings, recreational structures) to maintain site uses and protect the health of human occupants;
- management of *managed landscapes* (e.g. agricultural fields, forests, rangelands) to maintain intended land uses; and
- management of *focused visitor use areas* (e.g., parking lots, trails) to provide safe and enjoyable human access to natural areas.

The District's IPM program will provide guidance for careful management of pests in each of these four Pest Management Categories while protecting natural resources and public health.

Staff will continue to work with the consultant team to develop an IPM Guidance Manual, a pest database, train staff, conduct public outreach and complete an environmental review on the IPM Program. The schedule for completion of the final environmental review is May 2014.

## **FISCAL IMPACT**

Review and approval “in concept” of the draft IPM Policy will not result in an increase to the budget.

## **BOARD COMMITTEE REVIEW**

The Planning and Natural Resources Committee is scheduled to review the draft IPM Program upon completion in the fourth quarter of this fiscal year. No additional Board Committee review is required.

## **PUBLIC NOTICE**

Public notice was provided pursuant to the Brown Act and to persons indicating their interest in resource management projects. No additional notice is required.

## **CEQA COMPLIANCE**

Staff will use the Draft IPM Policy approved “in concept” by the Board to guide the development of the IPM Program and to develop a project description for purposes of conducting environmental review over the next year.

## **NEXT STEPS**

Staff will continue to work with the consultant team to develop an IPM Program and Guidance Manual, prepare an environmental review of the program, and keep the public informed.

Attachment

1. Draft Integrated Pest Management Policy

Responsible Department Head:  
Kirk Lenington, Natural Resources Manager

Prepared by:  
Cindy Roessler, Senior Resource Management Specialist

Contact person:  
Same as above

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## IV. INTEGRATED PEST MANAGEMENT POLICY

### BACKGROUND

The District is responsible for managing all the resources on its lands. These are mostly natural features, but also include built facilities such as offices, outbuildings, and trails. Sometimes, management of natural resources and associated human uses on District lands requires control of pests such as invasive plants, rodents or stinging insects. The District is committed to using Integrated Pest Management (IPM) principles in developing and implementing programs to meet its natural resource goals and to protect public health and human enjoyment of its preserves.

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- management of *managed landscapes* (e.g. agricultural fields, forests, rangelands) to maintain intended land uses; and
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The District's IPM program provides guidance for careful management of pests in each of these four **Pest Management Categories** while protecting natural resources and public health.

### Integrated Pest Management

**IPM** is a long-term, science-based decision-making system that uses a specific methodology to manage damage from pests. This methodology contains the following elements:

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- Monitor populations and effectiveness of control methods.

IPM requires the assessment of pest control alternatives and the monitoring of site conditions to effectively control a **target pest** with minimum impact to human health, the environment, and **non-target organisms**. IPM can be used for many types of **pests** and situations, including **invasive species** control, control of **structural and agricultural pests**, and control of other **problem pest species** (e.g., rattlesnakes and stinging insects).

IPM requires knowledge of the biology of pests, the available techniques for controlling them, and

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understanding of the secondary effects of the control techniques (such as soil erosion or pesticide drift or bioaccumulation). Control of a pest is only undertaken once a tolerance level has been exceeded. The effectiveness, safety, and efficiency of control methods are important considerations as they apply to the specific site conditions and life history of the target pest. IPM requires monitoring site conditions before, during, and after treatment to determine if objectives are being met and if methods need to be revised. IPM requires that the most effective, least toxic method be used to obtain the desired level of control. If **pesticides** are necessary to meet a pest control objective, the potential for harm to workers and the public must be carefully considered, as are effects on the environment, and then the least toxic and most effective, efficient, and target-specific pesticide is chosen.

*[sidebar] Pesticide is a broad term that includes any material (natural, organic, or synthetic) used to control or prevent pests including herbicides (weed or plant killers), insecticides (insect killers), and rodenticides (rodent killers) as a few examples.*

*[sidebar] Tolerance levels, as used in IPM, refer to the level at which pests can be present without disturbing or disrupting natural processes; causing economic damage; degrading intended uses or human enjoyment of built facilities; or resulting in an unacceptable human health risk.*

## Management of Natural Areas and the Problem with Invasive Species

Management of the District's natural areas focuses primarily on the control of invasive species that threaten natural resources. Natural Areas make up the majority of District lands, and typically experience low levels of human use.

**Invasive plants** have greatly altered many of California's natural plant communities. Because they originated elsewhere, many invasive plants are not susceptible to **predation, herbivory**, or diseases of this region. Invasive plants are extremely adaptable and can thrive in a wide range of conditions. They can grow quickly, reproduce early, produce many long-lasting seeds, and tolerate disturbance. Invasive plants can reduce native biodiversity in natural areas by gradually crowding out or competing with native plants for water and sun, and by reducing or modifying wildlife **habitat**.

*[sidebar] The California Invasive Plant Council maintains an Invasive Plant Inventory that rates the threat of non-native plant species by evaluating their ecological impacts, invasive potential and ecological distribution. Along with local knowledge, the District uses this list to evaluate the invasive risk of existing and new non-native plants found on District preserves.*

**Invasive animals** pose another threat to natural areas. Escaped/released domestic animals and other non-native wildlife species can thrive in the favorable climate of the San Francisco peninsula. Once established in a preserve, they compete for valuable **resources** and disturb the sensitive balance of natural **food webs**. Bullfrogs and wild pigs are examples of invasive introduced animals found in District preserves that physically displace or consume the native plants and wildlife that normally inhabit natural areas.

*[sidebar] Wild (feral) pigs are an example of an invasive wildlife species with obvious impact on District lands. They have been widespread in the central coast of California since about 1970, reproduce rapidly, dig up meadows and wetlands, and carry diseases that can affect people and livestock. They eat acorns, bulbs, and soil animals, and are difficult to control. Feral pigs were abundant in the South Skyline region in the 1990s. The District has been trapping feral pigs since 2000 and has substantially reduced their population and damage from their rooting.*

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Programs to control invasive plant and animal species often require a long-term commitment. With many invasive species, short-term lapses in management activity may negate years of expensive control programs. IPM offers a suite of strategies that can be used to effectively control invasive species on District lands.

## Management of Highly Modified Areas

Management of highly modified areas focuses on maintaining intended uses and providing for the comfort and safety of the people occupying or visiting the built facility.

The District manages over 150 buildings, including an administrative office in a city; and field offices, residences, and numerous outbuildings such as barns and sheds in the preserves. At these locations, population levels of certain animals and plants may threaten the primary use of these structures. For example, rodents, ants and similar structural and problem pest species are typically controlled in occupied structures when their population numbers may result in structural damage or health risks to humans. Weeds are often controlled in landscaped areas around buildings in preserves to maintain planned site uses. State law requires that **defensible space** be maintained around buildings by selectively managing surrounding vegetation, and that emergency vehicle access be maintained by keeping rural roads and trails within the District's preserves clear of obstructing vegetation.

The traditional approach to structural pest control is often modified because District structures are located in natural areas. For example, rodent control at field storage facilities is important to protect staff from exposure to diseases such as Hantavirus. However, because hawks, bobcats and other predators that inhabit District lands often feed on rodents, control of such pests must consider the sensitivity of the surrounding areas to the selected control treatments. IPM procedures provide a context for addressing health and human safety concerns with the protection of natural resources.

## IPM in Managed Landscapes

Management of managed landscapes such as agricultural fields, forests and rangelands focuses on requires a landscape-level approach that focuses on maintaining the long-term functioning of each type of managed landscape's natural resources for its intended uses (e.g., growing crops in agricultural fields, maintaining grassland forage quality for livestock).

The District occasionally acquires lands that support active agricultural production, and these lands often have unique pest conditions. Weeds are removed from row crops, vineyards, and orchards, and plant diseases, insects, and rodents are controlled on farm products and in agricultural buildings. For these properties, the District develops individual Agricultural Management Plans to guide agricultural uses, and ensure compatibility of natural resource protection and management, low-intensity public recreation and ongoing agricultural uses. IPM provides management solutions that address agricultural pest control in the context of the surrounding natural areas with recreational use.

Likewise, the District manages forests for overall forest composition and functioning. Where undesirable forest vegetation such as invasion of forests by Douglas fir begin to change the overall functioning of a forest, or where forest composition is altered by disease such as the loss of oaks due to sudden oak death, the District would first track the change, then develop a landscape level approach to pest control when such changes exceed a tolerance level.

For rangelands, the slow incremental conversion of grassland to shrubland (invasion by coyote bush) that is attributed to climate change can reduce the value of grasslands for livestock grazing. When such conversions exceed tolerance levels, the District would consider pest control - in this case active removal of shrubs for managed grazing lands.

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## Management of Focused Visitor Use Areas: Balancing the Natural Experience and Public Safety

Management of focused visitor use areas such as parking lots and trailheads emphasizes human access, health, and comfort.

In focused visitor use areas, problem pest species such as rattlesnakes and stinging insects can threaten the enjoyment or health of visitors, staff, and residents, and may require active management.

*[sidebar] An example of problem pest species control would be treating yellow jacket nests where they occur near trailheads, heavily travelled hiking trails, and similar high human use areas. IPM seeks to balance the need to maintain a healthy natural ecosystem with the need to achieve a tolerance level for each species that results in a reasonable level of safety for human/pest interactions.*

Where pest populations exceed tolerance levels at a specific site, the District will consider options for treating the specific pests using IPM. Tolerance levels are low for some problem species that have a high potential for harm to visitors, while tolerance levels for other problem pest species are higher where there is a low potential for harm to visitors. For example, there is a low tolerance level for venomous snakes at picnic areas and campgrounds, and relocation will be considered when even one rattlesnake is observed frequenting these areas. On the other hand, minor amounts of mosquito bites are expected while recreating outside, and visitor education is often considered an appropriate response. Management of focused visitor use areas also includes vegetation management for fire risk reduction, and brush control to maintain trail use. Pest control options for focused visitor use areas manage human/pest interactions for human safety and visitor enjoyment, while adjusting the levels of control for each problem pest species and situation.

## INTEGRATED PEST MANAGEMENT GOALS, POLICIES, AND IMPLEMENTATION MEASURES

The following goals, policies, and implementation measures are intended to address pest management on District lands, including management of natural areas, highly modified areas, and focused visitor use areas.

### Goals

**Goal IPM- Control pests by consistent implementation of IPM principles to protect and restore the natural environment and provide for human safety and enjoyment while visiting and working on District lands.**

**Policy IPM-1 Develop specific pest management strategies and priorities that address each of the four Pest Management Categories.**

- ◆ Manage invasive species in natural areas and set priorities for their control based on the potential risk to sensitive native species and loss of native biodiversity.
- ◆ Manage pests at highly modified areas such as buildings and recreational facilities to support existing uses, while also protecting human health and surrounding natural resources.

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- ◆ Manage pests in managed landscapes such as agricultural fields, rangelands, and forests to support existing uses, while also protecting human health and surrounding natural resources.
- ◆ Manage pests and potential human interactions at focused visitor use areas to minimize conflict, ensure visitor safety and enjoyment, and protect the surrounding natural resources.

### **Policy IPM-2 Take appropriate actions to prevent the introduction of new pest species to District preserves, especially new invasive plants in natural areas and weeds in agricultural areas.**

*[sidebar] Infestations of new pest species that are known to cause ecological harm elsewhere can often be effectively controlled or eradicated soon after detection. However, if treatment is delayed, such new pests can spread exponentially, potentially causing much more ecological harm, human health concerns, and exponentially increasing management costs in the future.*

- ◆ Stay informed on potential new pest species, their threat to District resources, likely **vector** pathways, control methods, and monitoring techniques.
- ◆ Participate in local weed management area programs, ranch and agriculture forums, and IPM training to stay informed on new pests in the region that could potentially occur on District lands, and careful and effective methods of control.
- ◆ Use **best management practices (BMPs)** during maintenance of structures and facilities to avoid introducing or spreading pest species on District lands.
- ◆ Conduct education and outreach to keep visitors, staff, and neighbors informed of the threat of pests, identifying actions the public can take to prevent and control their spread, and informing the public about District pest control treatments.

### **Policy IPM-3 Manage pests using the procedures outlined in the following eight Implementation Measures.**

- ◆ Develop and implement tolerance levels for pests within each of the three Pest Management Categories to determine when to undertake pest control.
- ◆ Determine the biology and life cycle of the pest species, its disruptive potential and relevant site conditions prior to implementing a pest control activity. Review pest control objectives for consistency with other site goals and establish tolerance levels that must be exceeded before pest control is undertaken.
- ◆ Choose site-specific strategies and times of treatment that provide the best combination of protecting preserve resources, human health, and non-target organisms and that are efficient and cost effective in controlling the target pest. Direct the control method narrowly at the most vulnerable point in the target organism's life-cycle to avoid broad impacts.



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- ◆ Methodically monitor results and modify control methods over time as site conditions and treatment techniques change and as needed to obtain an effective level of control.
- ◆ Use the least toxic method(s) to control identified pests. Where the use of pesticides is necessary, apply according to the label using all safety precautions and take all measures needed to protect the environment, the health and safety of visitors, employees, neighbors, and the surrounding natural areas including water and soil resources.
- ◆ Plan for repeat treatments as indicated by the pest's regenerative capabilities.
- ◆ Coordinate and cooperate with adjacent landowners, neighbors, and other responsible agencies to control pests and limit secondary effects.
- ◆ If eradication of a pest from a distinct location is not feasible, apply measures to achieve containment, sustained control, or slow down a pest's rate of spread.

### **Policy IPM-4 Monitor pest occurrences and results of control actions and use adaptive management to improve results.**

- ◆ Periodically monitor District preserves and facilities to detect pests at early stages.
- ◆ Monitor pest control activities to assess the effectiveness of different treatment methods on target and non-target species and use the results to guide future actions at similar sites (Adaptive Management).
- ◆ Maintain a **GIS database** of the location of pests on District preserves, and use this information to plan control actions.
- ◆ Share mapping information with adjacent landowners and other responsible agencies to assist in collaborative control efforts.
- ◆ Keep records of all pesticides applied and submit monthly and annual reports to the County Agricultural Departments. Obtain pest control recommendations and provide staff safety training in the storage, mixing and application of pesticides. Continue to follow all federal, state, and local regulations regarding the use of pesticides.

### **Policy IPM-5 Develop and Implement an IPM Guidance Manual to standardize pest management and IPM procedures on District lands.**

- ◆ Define pests, prevention, prioritization, tolerance levels and management strategies specific to each of the four Pest Management Categories.
- ◆ For each approved pesticide, provide information on its approved use and a risk assessment.
- ◆ Describe requirements for licenses, training, notification, reporting and monitoring.
- ◆ Develop a pest database for tracking and reporting pests and pest

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## GLOSSARY

**Pest Species** are insect, animal, or plant species that are incompatible with the District's goal of protecting and restoring the natural environment, and with providing opportunities to enjoy and learn about the natural environment. Several categories of pest species are defined below as well as their association with the three categories of pest management described above.

**Invasive species** are animal or plant species that invade and dominate sufficiently large areas, causing a reduction in **biodiversity**. They proliferate in the absence of natural control and interfere with the natural processes that would otherwise occur in natural areas. Once established, invasive species can become difficult to manage and can eliminate native species or otherwise alter the **ecosystem**. Invasive species are targeted in natural areas.

[sidebar.] *Invasive species can alter ecosystem processes by changing biotic ecosystem characteristics (such as plant community composition, structure, and interactions; trophic relationships; and genetic integrity) and abiotic characteristics and processes (such as fire regimes, erosion, sedimentation, hydrological regimes, nutrient, and mineral conditions, and light availability).*

**Structural and agricultural pests** include insect, plant, and animal pests that damage occupied buildings, formal landscapes, or agricultural crops, or pests that are a health threat to humans working in, living in, or visiting the buildings. Examples of structural pests include termites, ants, rodents, and stinging insects in buildings, and weeds in formal landscaped areas. Examples of agricultural pests include insects, weeds, and burrowing mammals such as moles and voles that damage crops. Structural and agricultural pests are targeted in highly modified areas.

**Problem pest species** include species that commonly occur on District lands, such as stinging insects, but whose presence can be incompatible when their proximity or behavior conflict with focused human use of facilities built in the preserves. For example, hornets that locate their ground nests in trails must be removed if they are stinging hikers and horses using the trail. Branches and other types of vegetation must be trimmed back from trails, parking lots, picnic tables, and benches to allow their use by visitors. Similarly, vegetation must be cut back from the sides of roads to keep them open for patrol, maintenance, and emergency vehicles. Problem pest species are targeted in areas with focused visitor use.

**Herbivory** is a type of predation typically used to describe the consuming of plants by animals. Herbivory has an impact on the health, structure, and diversity of natural plant communities. For example, low level herbivory can remove aging roots and leaves, allowing new growth of young roots and shoots. The new roots and shoots that grow provide better nutrients for absorption and reproduction. The feces of herbivores enrich the soil, which increases the chances of successful plant establishment. Herbivores also prune plants, which allows for more light passage and makes it easier for seeds to establish near parent plants. At high levels, herbivory can damage plants, changing the composition, and reducing the quality of the natural plant community.