

STEWARDSHIP MEMORANDUM OF UNDERSTANDING  
for  
Peninsula Park Rose Garden

**Purpose**

The purpose of this Stewardship Memorandum of Understanding (MOU) is to define the roles and responsibilities of the Friends of Peninsula Park Rose Garden (Friends) and Portland Parks & Recreation, North Zone (PP&R), together known as "the Parties", pertaining to the maintenance and enhancement of the Peninsula Park Rose Garden. Stewardship of Peninsula Park Rose Garden is hereby a partnership between the Parties and it is anticipated that this partnership will continue into the future.

**Term**

This MOU will take effect on October 15, 2014 through October 15, 2016. The MOU may be revised by mutual agreement of the Parties. The goal of this MOU is to guide activities through October 2016. After that date, both parties plan to review commitments, goals and focus areas for the following two year period. Either party may terminate the MOU at any time.

**Function of this MOU**

This non-binding MOU is a statement of intent regarding how the Parties will work together to maintain and enhance Peninsula Park Rose Garden. All donations and labor are to be given freely for the benefit of the Garden and are provided without expectation of payment or reimbursement by PP&R North Zone.

**Partner Commitments**

The Parties will carry out the purposes of this MOU through the following listed activities:

**I. Regular Garden Maintenance-Pest and Disease Control**

**A. Duties of Both Parties**

1. The parties will continue the Garden Maintenance Advisory Committee composed of the PP&R Northeast Park Supervisor, Horticulturist, IPM Coordinator, Rose Garden Botanic Specialist, and 2 Friends' representatives.
  - a. The Garden Maintenance Advisory Committee will assess disease, pest and weed impacts on the garden, and recommend potential management measures consistent with the IPM guidelines in Appendix A.
  - b. On at least an annual basis, the Committee will assess the overall condition of each variety of rose in the Garden, including disease resistance, vigor, form and color. Based on that assessment, the Committee will determine which varieties will be replaced. Selection of new roses, replanting schedule and related matters are covered in Section VI Special Projects

## **B. Duties of Friends**

1. Select one Garden volunteer, (the "Data Volunteer") to collect observations from other volunteers working in the Garden about:
  - a. Pest and disease infestation and damage and the effectiveness of current disease, pest and week control measures, and
  - b. whether the roses are being properly deadheaded and pruned.
2. The Data Volunteer will collect information on a weekly basis, record pest and disease infestation on a spreadsheet and deliver the spreadsheet to the PP&R Garden horticulturist on a weekly basis. In addition, the Data Volunteer will attend the Garden Maintenance Committee meetings and report on his or her observations.
3. In conjunction with PP&R, ensure volunteers have completed appropriate paperwork and are completing the volunteer hours collection forms. Track and submit volunteer hour totals to the PP&R Volunteer Coordinator on a monthly basis.

## **C. Duties of PP&R**

1. Chair Garden Maintenance Committee and convene Committee on at least a quarterly basis and more often if necessary.
2. Provide at least 2 classes taught by the IPM Coordinator in June (or July if necessary) to train volunteers to inspect the roses for pest and diseases.
3. PP&R will hold at least two orientation sessions in June detailing proper deadheading techniques.
4. In conjunction with FOPPRG, ensure volunteers have completed appropriate paperwork and are completing the volunteer hours collection each week. Track and submit volunteer hour totals.

## **II. Volunteer Recruitment and Support**

### **A. Duties of the Friends:**

1. In conjunction with PP&R, recruit volunteers to assist with fall and winter pruning and to assist with weeding and deadheading from April through September; periodically provide recruiting material for use by PP&R; periodically advertise volunteer opportunities with local media (e.g., Neighborhood Notes, Star News, OregonLive, etc.);
2. In conjunction with PP&R, develop and implement orientation sessions described in II. B. 2 below;

3. Provide periodic 15 minute training sessions on Fridays during deadheading season;
4. In conjunction with PP&R, organize volunteer appreciation events;
5. Follow all PP&R procedures related to volunteers including background checks, release forms, and reporting of hours.

#### **B. Duties of PP&R:**

1. In conjunction with Friends, recruit volunteers; distribute recruiting materials prepared by Friends, develop and implement orientation program described in A.4 above;
2. Hold at least 2 orientation sessions with resident and guest horticulturists and other park employees;
3. During deadheading season: provide, every Monday, Wednesday and Friday, 9 am – noon volunteer activity by providing tools and gardening tools (clippers, loppers, gloves, buckets, trash cans, rubbing alcohol to sterilize pruners, first aid kit), sign-in sheets, background check forms and direction regarding location of deadheading activity,
4. Conduct background checks and follow up as necessary;
5. In conjunction with Friends, organize volunteer appreciation events.

### **III. Donation Box**

#### **A. Duties of the Friends**

1. Keep the key to the donation box in a secure location; collect all funds deposited in the donation box on at least a weekly basis; provide a quarterly accounting at Garden Maintenance Committee meetings reflecting total funds collected, total funds expended and purpose of expenditures; use all funds collected to benefit the Garden, including without limitation, to pay for landscape improvements and support volunteers.

#### **B. Duties of PP&R**

1. Maintain the donation box in a secure and clean condition; provide at least one key to the donation box; replace text, logos and other material on the donation box as necessary.

### **IV. Public Education/Awareness**

#### **A. Duties of the Friends**

1. In conjunction with PP&R develop text and design for materials that increase public awareness of, and knowledge about, the Garden, including, a rack card for placement at Travel Portland and the Convention Center; solicit stakeholder input, as necessary;

to the extent of available finds, contribute to paying the cost of production and distribution of such materials.

2. Organize and staff regularly scheduled craft and information tables in the Garden during the summer months; organize and staff guided tours for public and private groups

## **B. Duties of PP&R**

1. Provide graphic design personnel, as available, to develop text and design of materials that increase public awareness of, and knowledge about, the Garden, including, a rack replacement card as described above; solicit stakeholder input, as necessary; contribute to and use funds provided by Friends to produce and distribute such materials.
2. Include Peninsula Park Rose Garden as part of the PP&R annual membership with Travel Portland

## **V. Strategic Plan**

### **A. Duties of Both Parties**

1. Collaborate on an outline and drafts of strategic plan to gain PP&R and Friends' endorsement. Plan to include phases, priorities, cost estimates, and an implementation schedule and identified funding.
2. Subject to staff availability, make available: IPM experts, maintenance experts and construction personnel to help develop and evaluate the following (including providing cost estimates where applicable):
  - a. alternative landscape and hardscape plans;
  - b. alternatives for pest and disease control;
  - c. alternatives for replacement of roses and soil amendment.

## **VI. Capital Improvements to the Peninsula Rose Garden**

- A. Capital improvements to Peninsula Park Rose Garden are not covered by this MOU except to the extent addressed in the development of the strategic plan. Any Capital Improvement is subject to approval by PP&R.

## **VII. Special Projects**

### **ROSE REPLACEMENT (ROUTINE AND PERIODIC MAJOR REPLACEMENT)**

#### **A. Duties of Friends**

1. In conjunction with PP&R, recruit volunteers for prepping and replanting roses in the Garden (including planting lines), develop and implement media plan and orientation program, solicit in-kind and monetary donations; provide input to PP&R on selection of replacement roses.

#### **B. Duties of PP&R**

1. In conjunction with Friends, recruit volunteers for prepping and replanting roses in the Garden, develop and implement media plan and orientation program, solicit in-kind and monetary donations; to extent possible, obtain donated roses.
2. Select replacement roses; develop planting plan, prepare beds for planting (including digging holes and staking planting lines); provide microbial dip for planting; make available shovels and other tools for planting; provide horticulturists to supervise planting.
3. PP&R agrees that landscape and similar roses (such as Knock-outs) will be planted primarily on the Garden slopes; shrub roses may be planted on the garden floor when agreed upon.

### **PARKE DIEM**

#### **A. Duties of Friends**

1. In conjunction with PP&R, identify annual Parke Diem project; make application for approval of project by Portland Parks Foundation; recruit volunteers to participate in annual project; coordinate project with the Foundation.

#### **B. Duties of PP&R**

1. In conjunction with Friends, identify annual Parke Diem project; provide tools and horticultural staff necessary to support and supervise project.

#### **Funding Responsibilities**

The City of Portland will assume primary financial responsibility **subject to availability of funds from the City**, for infrastructure maintenance projects. PP&R will also be responsible for ensuring that approved maintenance and restoration projects comply with all applicable planning and codes and environmental regulations. Friends may assume primary funding for projects as agreed upon with PP&R (North Zone).

#### **Funding Opportunities**

In the event that the Friends have interest in submitting grant applications for funding relating to the park, PP&R North Zone requests that:

1. Contact be made with the PP&R North Zone as soon as possible to review project ideas

2. Friends of Peninsula Park Rose Garden allow PP&R (North Zone) a minimum of two weeks' notice to provide a letter of support
3. Draft project description and draft project budget be submitted to PP&R (North Zone) for review prior to grant proposal submission

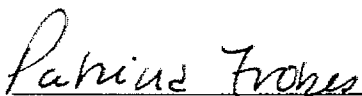
Resource and Communication Contacts

**Portland Parks & Recreation**

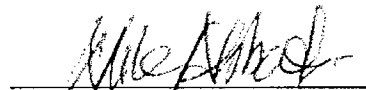
Sue Glenn Name	503 823-1605 Number	Stewardship Coordinator North Zone Manager
Mike Grosso Name	503 823-3642 Number	Northeast Zone Park Supervisor

**Friends of Peninsula Park Rose Garden**

Patricia Frobes Name	503 287-3166 Number	President
Yvonne Boisvert Name	503 284-1266 Number	Vice President



Patricia Frobes  
President  
Friends of Peninsula Rose Garden  
Dated: October, 2014



Mike Abbate  
Director  
Portland Parks & Recreation  
Dated: October, 2014

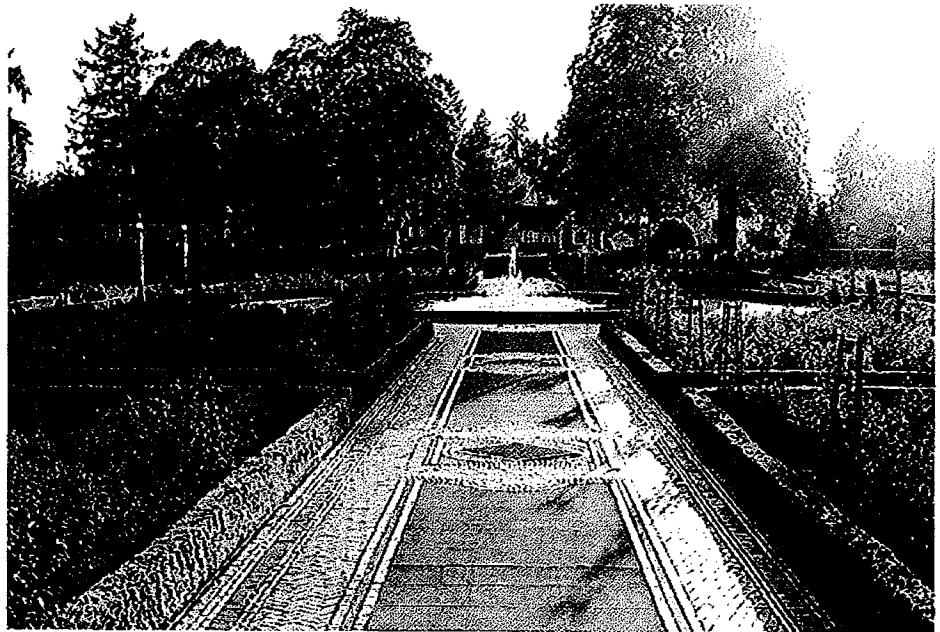
*Appendix A: Stewardship Plan and Focus Areas for Peninsula Park Rose Garden*





**PORTLAND PARKS & RECREATION**

Healthy Parks, Healthy Portland



## **Peninsula Park Rose Garden**

### **Integrated Pest Management Program**

DRAFT December 1, 2012

Revised October 2014

John Reed, IPM Coordinator

## **IPM Program Introduction**

As with all IPM assessments, the management of the Peninsula Park Rose Garden depends on the mission of the garden, bureau priorities, budgetary decisions, and multiple factors with varying levels of organizational control. Pests of primary concern in this garden are rose fungal diseases, rose insect and mite pests, and weeds. To manage these pests, PP&R uses Integrated Pest Management, an informed approach that uses the most appropriate pest control methods and strategies in a sustainable manner to meet pest management goals with the least possible hazard to people, property, and the environment.

From an IPM standpoint, the garden mission could be defined as follows: "The mission of the Peninsula Park Rose Garden is to honor the historic intent of the Garden by providing a seasonal display of attractive and colorful roses in a formal garden setting. Maintenance practices employed in the garden should reflect important bureau goals of good stewardship, environmental sensitivity, efficient management, and achievement of levels of quality appropriate for this asset."

### **IPM tools**

The primary IPM tools appropriate for use in this garden are:

#### **1. Choice of rose varieties**

To honor the historic design of the garden, hybrid teas, floribundas, grandifloras and climbers will be planted on the Garden floor. Landscape roses and similar varieties (such as Knock-outs) will be planted only on the Garden slope, shrub roses may be planted on the garden floor when agreed upon. Thousands of rose varieties are available in the horticultural trade which are consistent with historic design of the garden, they vary widely in their disease resistance, blooming season, bloom production, growth vigor and other factors. Choice of rose varieties to feature in this garden should be consistent with the garden's historic design and with the following factors in mind.

*Disease factors:* Since rose varieties vary so greatly in their ability to resist pests and diseases, choices of rose varieties should be made in an effort to reduce or eliminate disease presence naturally and without additional inputs. Varieties that are susceptible to diseases prevalent in our area, notably rose black spot and rose powdery mildew, should not be planted in the garden. Rose breeding in recent years has emphasized disease resistance, and a wide array of rose types are now available that grow well in our region and display excellent disease resistance. It should be understood that while no rose planting providing a diverse, large flowered, re-blooming display can be entirely disease free in all seasons in our climate, varietal choice should be the primary IPM tool, consistent with the planting limitations described above. High resistance to black spot should be the most important factor when there is a choice, followed by powdery mildew resistance. This is due to the fact that black spot occurs early in the season, from late April through July, and can cause significant leaf loss and subsequent loss of plant vigor. Powdery mildew is prevalent from July through September and while it can reduce vigor to some extent, it affects new growth rather than old, and its overall impact, while unsightly, is not as severe as black spot.



*Public viewing:* Given the layout of the garden and its boxwood hedging, these roses are primarily viewed by visitors at some distance. Primary season of public scrutiny and interest is late spring through early summer, but it is desirable to maintain color display until fall. Therefore, varietal choice should prioritize vigorous bloom producing roses. Enough different varieties should be present to provide a good color range and minimize reliance on just a few rose varieties.

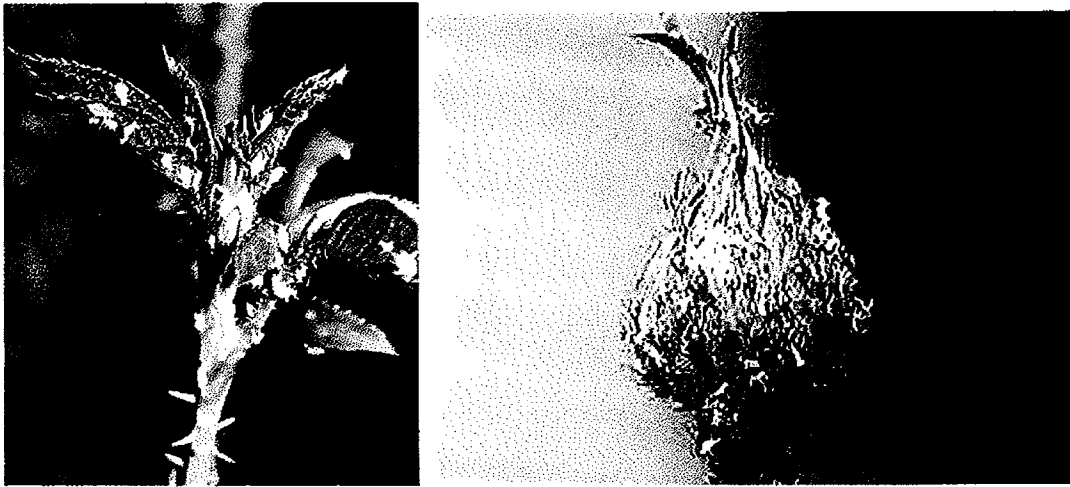
*Insect/mite factors:* Roses are challenged by a range of pests to varying degrees. In our area, the primary pests are aphids, two spotted mites, and rose midge.

Of paramount concern to this particular garden is the **rose midge**, an insect that, if left unchecked, can reduce or eliminate bloom production throughout the season. This tiny insect lays its eggs at the base of a developing flower bud. Once hatched, the larvae rasp at the plant tissues, destroying the potential rose flower. Once mature, the larvae drops to the ground to pupate in the ground and emerge as an adult. This cycle repeats continually from spring through fall with life cycles as short as 10-16 days. No other part of the rose plant is affected, but blooms are eliminated. The PP&R IPM program has worked with regional resources, including OSU entomologists, to advance our midge control knowledge and refine our efforts but it remains a challenge, and IPM decision-making for this insect continues to develop.

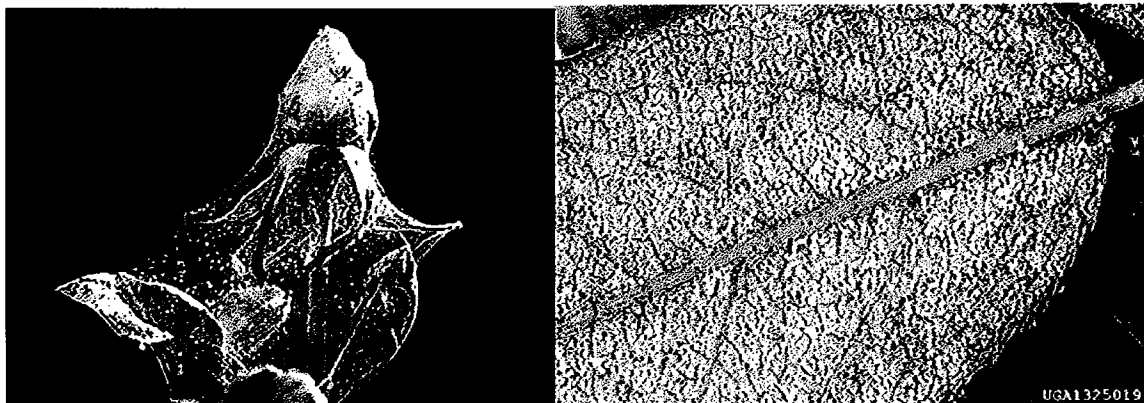
Varietal choice can possibly play a part in reducing the susceptibility of roses to this pest, but once this pest is present in a garden of this type, it will continue to be an issue no matter what roses are grown. Certain floribunda types of roses may be good choices to minimize midge infestations and these should be considered when roses are being chosen. Rose midge damage examples:



**Aphids** can be a problem in some years, but as long as foliar insecticides are not relied upon, natural predators typically hold aphid populations in check, or the infestations are short lived. No varietal choices can minimize aphid susceptibility. In most instances, aphids do not damage the plants, but they can be unsightly. Examples of aphids on roses:



**Spider mites** can cause serious problems during summer heat, but as long as foliar insecticides are not relied upon, natural mite predators usually keep these in check. No varietal choices can minimize mite susceptibility. Examples of mite damage to rose foliage:



## **2. Application of disease, insect and mite controlling pesticides**

Pesticides, which include fungicides, insecticides, miticides, and herbicides, are potential management tools in IPM. In PP&R's approach, these materials are typically used only when needed, and usually in combination with other effective IPM tools. This not only minimizes reliance on pesticides, but provides for a more effective, efficient, and less input reliant approach. Pesticides are delivered through varying ways: fungicides and miticides through spray applications to the foliage, and insecticides through foliar sprays and granular applications to the soil, depending on the target.

*Disease management:* If the proper rose varieties are utilized in this garden it should be possible to maintain reasonably disease free roses that provide a colorful display throughout the growing season without application of foliar fungicides. This does not mean the garden will be disease

free. Visitors that are attuned to rose diseases will notice some leaf loss, black spot, and powdery mildew at times. A good IPM approach for this garden includes some tolerance of rose disease presence. However, no rose should typically be so diseased that overall vigor is greatly reduced or long term viability of the plant is affected. And it should also be understood that in some years and weather conditions, disease pressure will be elevated.

It should be understood that if there is spraying of fungicides in this garden, it will bring with it logistical, budgetary, and community issues and impacts. Efficient foliar application to this large number of roses requires a large hydraulic spray system, and use of considerable quantities of material. And due to the need to isolate the public from the application site, including the use of a buffer zone during spraying, it also requires that a portion of the park be closed for a period of time for each application. Therefore staff applicators would have to time these treatments for the earliest part of the day, typically from 4 or 5 AM to 8 or 9 AM. Effective disease control requires applications every two weeks from April through September when targeting black spot and powdery mildew.

*Aphid management:* If natural controls are not adequate, aphids are easily controlled through applications of insecticides either alone, or mixed with a fungicide, however use of insecticides can upset natural predator populations and lead to future problems, particularly with mites. It is best if sprays are not used for this purpose.

*Mite management:* Mites can flourish in hot, dry weather, and they can be very damaging to roses if populations get high enough, but are typically controlled by natural predators as long as foliar insecticides have not been used.

*Rose midge management:* Insecticides are the most effective way this pest can be managed throughout an entire season, but the materials used, delivery methods, and sites targeted are critical to success and minimization of negative impacts. Current basic PP&R strategy for this pest targets this insect's pupal stage, which takes place in the soil below the roses. An application of a granular based insecticide 3-4 times per year with the initial treatment targeting the overwintering pupal emergence in early spring may work to adequately suppress midge in most cases, although there is typically some midge damage noted. Rose midge pressure varies from year to year. If necessary, Foliar applications of several insecticide classes can be made to combat midge. It is hoped that current soil based treatments will be adequate to combat this pest, especially if they are combined with mulch applications and timely deadheading. Foliar applications are not budgeted for this garden, and the negative logistical, rose health, park user impacts from such use are significant. Also there are significant negative impacts from using foliar insecticides, notably the elimination of natural insect predators that typically keep aphids, mites and other pests in check. Of most concern would be the loss of mite predators. Unchecked mite outbreaks can rapidly cause severe damage to roses. There is past experience at Washington Park Rose Test garden with just this kind of effect. If this were to happen, it would be very difficult to treat mites effectively in this garden and the roses could suffer greatly. For this reason, general foliar insecticide applications should not be a preferred control method for midge at Peninsula Rose garden. In extreme situations, a spot treatment through the use of backpack sprayers targeting rose flower bud terminals of affected roses could be used to help in midge suppression. This is a time consuming practice but it would better allow for maintenance of natural predators in the garden.

### **3. Use of mulches to control weeds and midge**

#### *Mulching for weeds:*

Weeds are a consistent issue in all growing areas, and in irrigated gardens such as this, active management is needed to keep weeds at low levels. A wide variety of weeds, both perennial and annual are common in this garden. Different weeds can require different treatments and strategies for control, however, applications of adequate mulch to the growing beds on a regular basis provides the best and longest term control for all weeds. Mulch applications need to be frequent enough that the barrier provided is adequate. The mulch should also be as coarse in grade as possible to keep germinating weed seeds from establishing on the surface. Care should be given to time the mulch application before larger weeds have grown big enough to penetrate the mulch from below. Small weeds are more successfully smothered by mulch.

#### *Mulching for rose midge control:*

There is also some evidence that a freshly applied layer of mulch can aid in hampering midge pupal emergence in the early spring, with the mulch acting as a barrier. Coarse grades of mulches would be best for this purpose. Care should be given to not over mulch the roses, as this would affect plant health if the layers built over the years to an excessive level. Over use of mulch would also bury the irrigation system heads rendering them unusable. Consideration of the timing of mulch application should be made to assist in midge control. In most years, this would result in mulch being applied in late February.

#### **4. Use of deadheading to control midge**

The larval stage of the midge feeds in the base of the developing flower bud. Removal of the infested bud before the insect has a chance to mature and drop to the ground for pupation is one way to reduce the infestation and subsequent generations. The difficulty in this management technique is in identifying the infested bud early in the infestation, distinguishing it from healthy forming flower buds, and removing it in a timely fashion. This method is also time consuming, and needs to be thorough, but it could be a viable technique if carried out by well trained volunteers committed to the task. Training for midge scouting would need to be facilitated through the IPM Coordinator. (See Garden Maintenance Committee in MOU)

#### **5. Application of weed controlling herbicides**

##### *Herbicide types:*

Mulching alone will not provide complete weed control in the garden, particularly given the significant weed seed bank present in the soil, and the current presence of weeds. Use of herbicides can be an effective and efficient measure to eliminate weeds. There are two categories of herbicides, post-emergent and pre-emergent. Post-emergent herbicides are applied to existing weeds and they control them through varying modes of actions. Pre-emergent herbicides act by keeping weed seeds from germinating and are applied over the surface of the soil, acting as a barrier. Given the extensive seed bank in the garden at this time, use of both types of herbicides would be effective.

##### *Application timing:*

Good timing of the application of these products is critical, with pre-emergent timing being best before germination of weeds, and post-emergent timing being best when weeds are small. Application of pre-emergents should also ideally be made when the roses are early in their growth stage to allow for uniform spread and effectiveness. Post-emergent timing also needs to

consider weather conditions such as rain and wind. Dry conditions during the application are needed, and drift of damaging spray materials to rose foliage or green canes cannot be allowed.

*Herbicide choice:*

Choice of herbicides is also important, as using the wrong product can be either ineffective for the target weeds, or potentially damaging to the roses. Systemic herbicides such as glyphosate based products are the most effective post-emergents; however they have the potential of damaging roses if the material contacts them. Desiccant herbicides are less likely to cause rose problems, but their effectiveness on weeds is limited. Use of these differing materials depends on multiple factors, such as weed target, time of year, extent of the application, and other factors.

## **6. Manual Weeding**

**Subject to availability, crews will be retained on a [monthly] basis to manually weed to Garden. From May to June, volunteers will be encouraged to weed any portion of the garden that has not been recently sprayed with herbicide.**

## **7. Use of cultural methods such as irrigation, fertilizing, and other soil amendments.**

To produce the best display of blooms, grow vigorously, and be as resistant to diseases as possible, roses need optimal soil conditions, soil quality, adequate watering, and good fertilization.

*Soil testing:*

Before the installation of roses at the garden, appropriate soil testing should be done to determine macro and micro nutrient levels, levels of organic components, pH levels and other pertinent information. Measures to correct problems can then be carried out and a plan determined to improve conditions over time.

*Irrigation:*

The garden has an irrigation system in place that should be adequate to irrigate the roses. Optimal levels of watering need to be determined and adjusted throughout the season.

*Fertilization:*

Proper fertilization of roses is key to good vigor and bloom production which are essential to the success of the garden. The soil testing process will help inform decision making. The typical limiting factor in our local soils is nitrogen. Adequate nitrogen should be supplied throughout the growing season, most effectively through the use of slow release fertilizer properly formulated. Underfertilization is a common problem in rose plantings.

*Rose pruning and deadheading:*

Proper rose pruning and deadheading is an important part of their care. Roses need to be pruned correctly and spent blossoms must be removed in a timely fashion to ensure proper displays.

*Rose removal:*

Roses that exhibit signs of extensive loss of vigor, winter damage to the crown, crown gall disease, excessive age and loss of vigor, mosaic virus and other problems should be removed

from the garden. Decisions about removal and replacement will be made by the Garden Maintenance Committee

## **IDEAL PROGRAM ELEMENTS**

The following is a description of the IPM program elements that will be used in the management of the rose garden during one year:

### **February:**

Removal of problematic roses (May be fall or winter/spring)

Planting of replacement roses. (depending on supplier-may be fall or winter/spring)

Major rose pruning by trained staff assisted by volunteers

Treatment of rose growing area with pre-emergent herbicide (Surflan and Gallery) just prior to mulch application.

Application of a coarse grade mulch to all rose growing beds if the mulch is not adequate to suppress weeds.

### **March:**

Soil testing (biannual or as needed)

Scouting for rose pests and disease.

First fertilization- dependent on soil tests (likely use of coated, slow release urea fertilizer).

Early March- application of granular insecticide (imidacloprid) to soil surface of all rose growing areas.

Ongoing spot treatment of existing weeds during the month with glyphosate based post emergent herbicide, using low pressure, coarse droplet sprays in no wind conditions.

### **April:**

Scouting for rose pests and disease.

### **May:**

Scouting for rose pests and disease.

Mid to late May- application of granular insecticide (synthetic pyrethroid) to soil surface of all rose growing areas.

Manual weeding

Ongoing spot treatment of existing weeds during the month with glyphosate based post emergent herbicide, using low pressure, coarse droplet sprays in no wind conditions.

First fertilization- dependent on soil tests (likely use of coated, slow release urea fertilizer).

### **June:**

Deadheading begins as first bloom flush ages.

Scouting for rose pests and disease.

Mid to late June, application of granular insecticide ((synthetic pyrethroid) to soil surface of all rose growing areas

Manual weeding

Ongoing spot treatment of existing weeds during the month with glyphosate based post emergent herbicide, using low pressure, coarse droplet sprays in no wind conditions.



**July:**

Scouting for rose pests and disease..

Deadheading as needed.

Mid to late July, application of granular insecticide (synthetic pyrethroid) to soil surface of all rose growing areas

Manual weeding

Fertilization

Ongoing spot treatment of existing weeds during the month with glyphosate based post emergent herbicide, using low pressure, coarse droplet sprays in no wind conditions.

Use of desiccant type herbicides now possible.

**August:**

Scouting for rose pests and disease

Manual weeding.

Deadheading as needed.

Fertilization as needed.

**September:**

Scouting for rose pests and disease

Manual weeding.

Deadheading as needed.

Ongoing spot treatment of existing weeds during the month with glyphosate based post emergent herbicide, using low pressure, coarse droplet sprays in no wind conditions.

**October-November:**

Topping of roses.

Possible rose removal/rose planting depending on suppliers

**Foliar spray option**

In this garden, the planting of disease resistant rose varieties should provide for a good bloom display without carrying out a full foliar spray program of fungicides. Managing rose diseases by using naturally resistant roses is the intent in the long run. However, management priorities and consideration of acceptable levels of disease damage may impact what activities are carried out. Additionally, midge populations may rise to levels that are unacceptable and may require foliar use of insecticides to suppress them. Full foliar spraying of either of these materials would have have significant logistical, budgetary, and community issues and impacts.

***Fungicidal spray program elements:***

A typical fungicidal spray program would include:

Begin program in mid-April. Conclude in early September.

12 sprayings, at two week intervals.

Use of multiple fungicide modes of action to combat pathogen resistance.

Applications are timed for minimizing impact on park visitors.

Applications are made between 4-5 AM and conclude at 8-9 AM.

Public access to the garden and a buffer zone is eliminated during the application; re-entry is not allowed until the sprayed product has dried.

Applications carried out only by trained, full time staff with current state Public applicator license with Insecticide/Fungicide category endorsement.

*Insecticidal spray program elements:*

Use of insecticidal materials can be done alone, or combined with a foliar fungicide spray, so the elements would be similar as described above. However, use of insecticides on rose foliage brings with it certain impacts to the roses. Notably, use of insecticides to kill midge will also upset the natural balance of insect predators that keep other insects and mites in check. Typically this results in a surge in mites populations during the dry summer months. Levels can easily rise to highly damaging levels, necessitating use of miticides to control them. And unlike fungicide sprays, miticide applications require extensive plant coverage, larger quantities of spray, and are difficult to carry out, particularly in a garden such as Peninsula. It is likely that mite sprays would need to be carried out over several mornings due to their duration. Adequate control may not be assured. *Therefore, use of foliar insecticides at Peninsula Rose garden should be avoided if at all possible.*

