SARASOTA COUNTY INTEGRATED PEST MANAGEMENT PROCEDURAL GUIDELINES
Effective June 22. 2015

1. Subject:
Integrated Pest Management (IPM) is a practice promoting sustainable pest management methods that minimize health, environmental and economic risks. It is an approach that uses a combination of techniques to suppress pest populations (e.g., weeds, insects, diseases, etc.). All necessary techniques are consolidated in a unified program so that pests are kept at acceptable levels in an effective and economical manner that is not detrimental to human health and the environment.

A viable IPM program requires the adoption of a sustainable chemicals management policy. This policy should be based on the principle of substitution as the primary criteria for chemical management within Sarasota County's IPM program. With the principle of substitution as a framework, the promotion of safer chemicals in processes will be implemented with county and contractor sectors within the Sarasota County Government managed areas and the use of safer chemicals in products should be incorporated at the design stage.

The principle of substitution states that hazardous chemicals should be systemically substituted by less hazardous alternatives or preferably alternatives for which no hazards can be identified. The Sarasota County IPM program will assiduously apply this principle as we review our approved chemical list each year.

2. Authority:
Sarasota County Board of County Commissioners Resolution No. 2005-110 confirms the continued adoption of Integrated Pest Management as the county's standard pest management practice and maintains the Integrated Pest Management Advisory Board. This document is in accordance with Resolution number 02-119, Sustainable Stewardship, and Section 2-228, Environmentally Preferred Procurement, of the Sarasota County Procurement Code Ordinance Number 2014-095.

3. Purpose:
This document provides guidelines for all levels of the county involved in activities related to the management of pests and undesirable vegetation, including contractual services, and sets forth procedures in accordance with the Integrated Pest Management Resolution No. 2005-110.

4. Policy:
It is the goal of Sarasota County Government to reduce the risk to human health and the environment by minimizing the use of pesticides through application of integrated pest management practices and emphasizing proven, effective least-toxic and non-toxic approaches and products in County practices.

4.1 The IPM Program:
The aim of the program is to suppress pests and undesirable vegetation with minimum impact on human health, the environment, and non-target organisms. The success of the program depends on adherence to the IPM Protocol listed below in 4.2. IPM is not a single chemical approach or strategy but a decision making process that involves a combination of practices to control problems. Control tactics can be cultural or biological.

For example: adopting environmental landscape management (ELM) practices that include appropriate plant selection and use of good cultural practices, appropriate use of design and materials to prevent pest problems, proper housekeeping and maintenance to minimize indoor pest problems, expanded larvicide enhancement areas to prevent mosquito production, and increased education of the public on IPM practices and potential effects of pesticides on health and the environment. Where chemical control strategies are required, they will use only those pest management products on the approved list of products and attempt to tier strategies. IPM requires more information, thought and

team planning than ordinary, single approach management strategies, but the outcome is a healthier community and environment. All county personnel and contractors will adhere to the Protocol in section 4.2 below.

4.2 The IPM Protocol:

a. IDENTIFICATION and SCOUTING - Identify the type of pest or undesirable vegetation problem by scouting and inspection. Understand pest biology.

b. MONITORING - Determine the extent of injury or problem levels (set thresholds); Use visual inspection or monitoring devices. Keep records.

c. ANALYSIS - Based on findings in I or 2, determine best response: options of take no action, continue monitoring (collect more data) or act to address pest.

d. REVIEW CONTROL OPTIONS - Review available cultural, mechanical, biological, as well as chemical control options.

e. SELECT CONTROL TACTICS - Select the most environmentally sound and economically viable treatment strategies to suppress the pest problem. Least-toxic methods must be used before more toxic ones.

f. USE APPROVED PESTICIDES - Use only products that are on Sarasota County's list of approved pesticides. (See appendix A)

g. EVALUATE RESULTS - After implementation of control measures, evaluate to determine if action taken has been effective in pest reduction and is cost effective.

h. RECORD KEEPING - Record all pesticides used, rates used, amounts applied and sites of application. Labels and MSDS sheets must be available and maintained at all times with the applicator and in all facilities where materials are stored.

5. IPM Coordinator responsibilities:

a. Chair the IPM Working Group and assist county departments in implementing the IPM Policies and Procedures

b. Provide staff support to the Integrated Pest Management Advisory Board

c. Provide support for educational programs on IPM activities

d. Update IPM policy and procedures as required.

e. In consultation with the IPM Advisory Board, develop a list of acceptable pest management products in accordance with the IPM approach and review and update the list annually. The County Administrator has designated the Director of Health and Human Services to be the final arbitrator when the IPM Advisory Board, by majority vote of the members, disagrees with the decision of the IPM Coordinator on acceptable pest management products.

f. Have readily available all labels and Material Safety Data Sheets (MSDS) for pesticides being used by county staff and vendors.

g. Conduct annual evaluations of the IPM programs to ensure that this policy is carried out. Review monthly inventory and usage pesticide reports submitted by business centers units to monitor compliance and evaluate the IPM program.

h. Assist county departments business units in complying with regulations involving pest management and pesticide application [e.g. DACS certifications, NPDES, etc.], (See Applicator Responsibilities below).

6. Department responsibilities:

a. Develop an IPM plan for the unit [see section 9 for requirements]. This plan should be updated as needed and reviewed annually at a minimum.

b. Establish IPM performance measures to reduce the use of chemical pesticides and increase monitoring. Have a designated member attend IPM Working Group Meetings. Assist the county IPM Coordinator and IPM Advisory Board in developing policy recommendations.

c. Provide for continuing education and certification training of applicator staff. Assistance will be provided by Cooperative Extension personnel and other qualified people in the county or state.

d. Modify job descriptions to assure that training and educational requirements for applicator personnel comply with state regulations pertaining to the control of vegetation and pests and the use of pesticides.

e. Prohibit the purchase or use of unapproved pesticides. Any special need to use other than approved list pesticides must be approved by the IPM Coordinator in consultation with the IPM Advisory Board. Units must submit a request form and gain written approval to have a product added to the list (See Form, Appendix B).

f. Assist the IPM Coordinator with program assessment by ensuring that monthly inventory and usage pesticide reports used are forwarded to the IPM Coordinator for review by the 15th of following month.

g. Require that each employee assigned to handle pesticides is adequately trained in pesticide safety and correct pesticide handling procedures before they are allowed to handle pesticides.

h. Submit all annual agreements that may contain or require the application of pesticides to the IPM Coordinator and IPM Advisory Board at least 30 days before going out to bid. Establish a monitoring program for all agreements and evaluate contractor programs to assure compliance with IPM principles and desired outcomes.

i. Require that all full-time employees and vendors have appropriate state certifications. If a pesticide must be mixed before application, the applicator must be certified or be a carded employee under the direct supervision of a certified person. Ready-to-use pesticides on the approved list do not require applicator certification for projects requiring 5 gallons or less.

j. Prohibit hand-held application of herbicides from windows of vehicles to control of weeds on sidewalks and other impervious surfaces along streets and roads.

k. Ensure that pesticides are properly maintained and stored. Pesticides must be in an appropriate building that contains spill cleanup equipment and written emergency spill response procedures, along with the names of the primary and secondary persons responsible for the storage facility.

7. County Applicator Responsibilities:

a. No pest management treatments are to be conducted unless the problem has been identified and scouted. Monitoring is one of the most important components of IPM.

b. Use least toxic pesticides only when other control methods would not be or have not been effective or practical in maintaining the established level of service. Select effective pesticides from the approved list that are the least toxic, effective products available in order to minimize risk to the applicator as well as other people and non-target organisms.

c. Avoid disruption of natural enemies by becoming familiar with beneficial organisms. Consult the IPM Coordinator or use available charts and literature to evaluate impact of control strategies and their toxicity to specific natural enemies.

d. Pesticide efficacy can vary from one pest to another, one location to another, and even from one year to the next in the same location. It is essential when pesticides have to be used to select the correct materials based upon their least toxic impact and efficacy. Record keeping will be used to support selections.

e. Control insect pests during the most vulnerable point in their life cycle or growth period. The same holds true for undesirable vegetation. Young, actively growing weeds are usually the easiest to control or remove. Control weeds before they produce seeds.

f. Follow the label to determine the rate and method of application. The control action chosen must focus on the site of the problem so that only areas that need to be treated are targeted. Proper application will maximize effectiveness and minimize effects on beneficial organisms.

g. Liquid sprays must not be applied when winds exceed ten miles per hour so as to minimize any undesirable drift.

h. Applicators must use the minimum personal protective equipment (PPE) required by the label or comply with business center policy if it holds a higher standard.

i. Observe action thresholds of pest levels, if available, to determine when numbers or situations pose a problem. Maintain records of numbers or kinds of problems to track occurrence and evaluate actions taken. A yearly report on findings should be presented at an IPM Working Group meeting.

j. Adhere to the following pesticide procedures:
   - Public notification of pesticide applications (according to each business center's operations for specific pests).
   - Proper application techniques
   - Knowledge and actions to follow in the event of a pesticide spill
   - Proper pesticide storage procedures
   - Cleaning and calibration of equipment procedures
   - Storage and disposal of pesticide containers
   - Scouting and record keeping
   - Strict compliance with each EPA label's personal protection equipment (PPE) requirements
   - Maintenance of up-to-date records of pesticide purchased, amounts used and balance on hand

8. **Pest Management Contract Managers' and Contractors' responsibilities:** All county contracts will include the IPM process listed above in section 7. The contract manager will monitor and evaluate the effectiveness of the IPM practice and compliance with IPM principles. Additionally, the contract manager will evaluate applications to assess effectiveness of pest management approaches

consistent with desired outcomes. Lastly contract manager shall give prior notice to individual's residents on mitigation activities that are on the State and County chemically registered list.

a. Contract managers will obtain record of contractor's FDACS certification carrying the appropriate category for desired pest management activity.

b. Contracts must stipulate the responsibility of the contract manager and contractor in carrying out inspections.

c. Contracts will contain a list of approved products. Any deviation from this list must be approved by the contract manager in consultation with the IPM Coordinator as described above in section 5e.

d. Contractors responsible for applying pesticides will adhere to all FDACS regulations regarding proper pesticide applicator licensing of staff.

e. County contract managers may require greater level of licensing or license oversight than required by the State dependent on specific project needs or environmental sensitivity of areas being maintained or modified under the contract.

9. **Development of Integrated Pest Management Plans:** All departments are required to refer to the steps in the IPM process (section 4.2) in developing a written IPM plan. Each individual plan will include the following:

a. Describe in detail the area of pest management responsibility and maintenance (number of acres of canals, ponds, roadsides, athletic fields, parks, natural areas, buildings, bedding plants, street trees, etc.).

b. Identify the pests or undesirable vegetation problems. Describe several examples for unit's common pest management activities including monitoring, threshold levels, and specific control strategies (Le. mechanical, chemical control).

c. Describe scouting and inspection procedures.

d. Describe control options, including cultural, mechanical, biological as well as chemical (selected from the approved list).

e. Include samples of record keeping forms.

f. Current list personnel involved by position description and required FDACS certifications (e.g. limited, restricted, public health, etc.).

g. Location of any pesticide storage facility. Description of storage area with location of MSDS, on site PPE, eye wash stations, and skill kits. If necessary, describe products and approximate amounts to be reported to State Emergency Response Commission for Tier II Emergency and Hazardous Chemical Inventory reports.

10. **Selected Areas of Concern:**
    a. Pesticide applications in or near water:
        - Use the IPM Protocol in 4.2 to minimize pesticide applications with special consideration to methods that reduce need for and utilize least toxic options.
        - Consider non-chemical means of control when and where practical and effective for aquatic plant management activities.

- Comply with regulations and follow BMPs involving pest management and pesticide application [e.g. NPDES, etc.].
- Coordination with newly initiated programs to reduce pesticide impacts and development of IPM protocols for these areas with an initial focus on LID programs (biorention/bioswales). Success of the program will result in a reduction of pesticide application and costs while improving water quality and ground water recharge. These initiatives will require the monitoring during all phases.

b. Roadside vegetation management: Consider non-chemical means of control when and where practical and effective.

c. Contractual management of county building landscapes: The environmental landscape management requirements are as stated in the grounds maintenance contract.

d. Building construction: The construction, renovation or expansion of any county building shall require:
   - Appropriate design to exclude pests such as rats, birds, etc. Use design and construction techniques that prevent future infestations of rodents, birds, bats, insects and other creatures that can move into a structure causing structural, health or comfort problems. This exclusion process will include sealing all penetrations into a structure including mesh wire over vents, closing abandoned plumbing and roof drain pipe, caulking windows, doors and utility penetrations and any other openings that will allow entry to unwanted insects and animals. In situations where an open vehicle bay or work area is attached to a controlled interior space, all attempt should be make to isolate the two.
   - Wood Destroying Organisms (WDO's): Termite prevention by utilizing in-ground bait stations, borate saturation treatment of above-ground wood materials or non-chemical exclusion methods should be the preferred IPM strategy. Subterranean termites are only one of several WDO that can infest a structure and cause serious damage. Bait stations and under-slab treatments only address one form of WDOs and offer a limited control rather than a more holistic approach. For that reason borate-pretreatments are preferred. Borates are practically non-toxic but highly effective. When borate products are targeted to the exposed, unpainted wood surfaces it offers long term, residual protection against all forms of termites, other wood borers and to a degree wood rot. Moreover, borated woods reduce potential for mold-related health issues. Barrier treatments are not allowed without a special exception for IPM coordinator. These types of applications are typically more toxic with higher probability for migration off site, non-target effects, and movement into ground water while generally being less effective long term.

e. Building maintenance shall include:
   - Proper housekeeping and storage to avoid attracting pests.
   - Indoor use of least toxic alternatives only, including traps, bait stations, gels, dusts or other approved pesticides to address pest problems that arise.
   - Indoor pest management will not include chemical spray applications.

11. Approved Pesticides:

Appendix A is the approved list of pesticides for use in Sarasota County Government. County personnel and contractors involved in the application of pesticides must only use products on the approved list. Use of products other than those on this list is prohibited on any county-owned property or facilities. Products to be added to the list must be recommended to and approved by the IPM Coordinator in consultation with the IPM Advisory Board.

12. Prohibited Pesticides: The categories and/or products listed below are prohibited or restricted for use within the County.

a. Prohibited products include:
   - All Organochlorine insecticides
   - Organophosphate insecticides (except those currently used by the Mosquito Control District)
   - Atrazine
   - Copper Crystals (limited to specific sewer applications i.e. clay pipes with root blockage etc.)

b. Restricted Products include:
   - Fipronil (restricted use on turf and athletic fields)

13. Updates
This document is to be considered a "living" document and along with its companion Appendix A are subject to change and will be revised as advances are made in the mitigation and changes in the target pest and or situations arise.

Approved:

Charles H. Henry,
Director, Health & Human Services

Date 6-22-2015

APPENDIX A: LIST OF APPROVED PESTICIDES FOR USE IN SARASOTA COUNTY GOVERNMENT

County personnel or contractors involved in the application of pesticides must only use products on the approved list in the approved target area. Use of products other than those on this list is prohibited on any county-owned property or facilities. Products for inclusion in the IPM program must be submitted to and approved by the IPM Coordinator in consultation with the IPM Advisory Board.

INSECTICIDES (Mosquito Management)

Adult Mosquitoes

- Naled 87.4% (Dibrom®Concentrate) - aerial applications
- Sumithrin 10% (Anvil® 10x 10 UL V or equivalent) - aerial applications
- Sumithrin® 5%, Prallethrin 1 % (Duet FM Dual-action) - ground applications
- Permethrin 4%, Piperonyl Butoxide 4% (Biomist® UL V 4+4 or equivalent) - ground applications
- Lemon grass oils 3% (Aerosol sprays or equivalent)--indoor **sprays County Buildings only after hours**
- Etofenprox 20% (Zenivex or equivalent) Aerial and Ground ULV
- Deltamethrin (DeltaGuard) Aerial ULV

Larval Mosquitoes

Biological control

- *Gambusia holbrooki* (mosquito fish) - for use in isolated non-environmentally sensitive areas with permanent water including abandoned pools

Biocides: reduced risk natural biocides such as *Bacillus species* and derivatives the soil bacterium *Saccharopolyspora spinosa*

- *Bacillus thuringiensis israelensis* 2.86% (Mosquito Bits® or equivalent)
- *Bacillus thuringiensis israelensis* 2.80% (VectoBac® G or equivalent)
- *Bacillus thuringiensis israelensis* 1.2% (VectoBac® 12 AS or equivalent)
- *Bacillus sphaericus* 7.5% (Vectolex® CG or equivalent) • *Bacillus sphaericus* 51.2% (Vectolex® WDG or equivalent)
- *Bacillus sphaericus* 6%, B. *thuringiensis* 1 % (Four Star™ Briquettes or equivalent)
- Spinosad 0.5% (Natular™ G or equivalent)
- Spinosad 6.25% (Natular™ XRT or equivalent)

Insect Growth Regulators (IGRs): are in the bio-pesticide class, the use of juvenile hormone analogs interfere with the mosquito life cycle and prevents emergence of the adult mosquito with minimal non-target effects

- (S)-Methoprene 2.1 % (Altosid® XR Extended Residual Briquettes)
- (S)-Methoprene 4.25% (Altosid® Pellets)
- (S)-Methoprene 1.5% (Altosid® XRG Pre-Strike pouches or Altosid® PRO-G

Organophosphate

- Temephos 5% (Skeeter Abate®) (when other options not viable)

Larvicide/Pupacide

- Agnique® MMF† 100%
- Aqnique ® MMF G 32% (granular pupacide)
- Aliphatic Petroleum Distillate 98.7% (Golden Bear 1111 or equivalent)

Repellents

- DEET 29%ł - insect repellent*

†Monomolecular Surface Film for Control of Immature Mosquitoes and Midges

ł 29% or less recommended. Increased active ingredient does not increase repellency

*Brand and/or concentration not specified. Choose most appropriate least toxic option

INSECTICIDES (Building Structures, Interior/Exterior) Ants, Cockroaches

- Boric acid dusts*

• Diatomaceous Earth*
• Silica gel*
• Eugenol 2.90%, Thyme oil 0.6% (EcoEXEMPT® G) - granules for ants, cockroaches, crawling insects
• 2- Phenethyl Propionate 4.50%, Eugenol 1.75% (EcoEXEMPT® D) - dust for cracks and crevices
• Thiamethoxam 0.010% (Optigard™) - ant gel bait
• Abamectin, Borax, Orthoboric Acid, Hydramethylnon, Hydropene, Indoxacarb, Methoprene, Pyriproxyfen, Spinosad, Sufluramid - (Solid, liquid, granular and gel baits*)

Crawling Insects/Foliar Pests/Flying Insects
• Potassium Salts of Fatty Acids 49% (M-Pede®) - insecticidal soaps
• Rosemary Oil1 0%, Peppermint oil 2% (EcoExempt® IC2) -liquid spray, crawling insects
• 2-Phenethyl Proprionate 0.1 % (EcoPCO® ACU) - crawling and flying Insects
• 2-Phenethyl Propionate 1.0%, 0.4% Pyrethrins - (EcoPCO® AR X) - crawling and flying insects
• 2-Phenethyl Propionate 1.0%, Piperonyl Butoxide 3.0% (EcoPCO® Jet X) - aerosol jet spray wasp nests
• Zylam (Dinofeturan 10% or equivalent) injection for control of Rugose Spiraling Whitefly (*Aleurodicus rugioperculatus*) on Gumbo Limbo trees maintained by Sarasota County.

Wood Destroying Organisms (WDOs): Bait stations and under-slab treatments only address one form of WDOs thus; only offer limited pest management. For that reason borate pretreatments are preferred, *see more in IPM Procedures, Section 10.*
• Termites (Subterranean) monitoring/baiting systems
• Termite baits Stations* (Sentricon® or the equivalent)
• 0.25% Diflubenzuron (Labyrinth ™ or equivalent) Termites (Dry wood)
• Borate Compounds* (liquid spray, mist, and foam injection) - primary control option
• Premise®* or equivalent (Imidacloprid) - gallery injection only
• Fipronil 9.1 % (Termidor® SC or equivalent) - gallery injection only as a last resort for historical buildings (pre 1940 construction) and with facilities management approval.
• Vikane (Sulfuryl Fluoride 99.8%) for fumigation by contractor to eliminate termites in County buildings deemed to be of historic significance.

Note: Trenching & barrier treatments are not allowed without a special exception for IPM Coordinator

INSECTICIDES (Landscapes)
Beetles, Caterpillars
• *Bacillus thuringiensis subspp. B.t. aizawai, B.t.kurstaki, B.t.tenebrionis* - liquid sprays*
Foliar Pests (Aphids, Scales, Mealybugs)
• Salts of Fatty Acids* (Insecticidal Soaps)
• Refined Oils* (Horticultural Oils)
• Spinosad 11.6% (Conserve® SC) - liquid spray for crawling insects
Ants
• Abamectin, Borax, Orthoboric Acid, Hydramethylnon, Hydropene, Indoxacarb, Methoprene, Pyriproxyfen, Spinosad - solid, liquid, granular and gel baits*
Caribbean Crazy Ants (CCAs): an emerging issue at several parks with potential to predate on native wildlife and damage utilities. Past efforts and reports statewide indicate this species is difficult to control. Current CCA management strategy is as follows:
• Pressure washing of designated areas
• Sanitation (esp. pad/dumpster- scheduled routine)
• Baiting with boric acid (monitored/cleaned/re-charged)
• Use of "knock down" product(s) as last resort (need approval of product(s))

INSECTICIDES (Athletic Fields)

Fall armyworms, sod webworms
• Spinosad 11.6% (Conserve® SC) - liquid spray for crawling insects
Fire ants
• Indoxacarb 0.045% (Advion® or equivalent) - fire ant bait
• Hydramethylnon 0.73% (Amdro® or equivalent) - fire ant bait
• (S)-Methoprene 0.5% (Extinguish® or equivalent) - fire ant bait
• (S)- Methoprene 0.250% + Hydramethylnon 0.365% (Extinguish Plus® or equivalent)
Nematodes
• *Bacillus firmis* 5% (Nortica® or equivalent), reduced risk natural biocide for nematode reduction in athletic turf including lawn bowling and croquet greens
Mole crickets
Biological Control
• Nematodes, *Steinernema scapterisci* 27% (Nematac® S or equivalent), parasitic nematode of adult mole crickets and last stage nymphs
• Larra wasps, *Larra analis,* ectoparasitoid of adult mole crickets and last stage nymphs
Chemical Control
• Indoxacarb 0.22% (Advion® or equivalent) - granular bait
• Imidacloprid 75% (Merit® 75W or equivalent) - primary liquid systemic spray for newly hatched mole cricket nymphs
• Bifenthrin 7.9% (Talstarone™ Multi-Insecticide or equivalent)
• Fipronil 0.0142% - 0.1% (Chipco Choice or Top Choice) –when control has failed with IPM approved Imidacloprid products and Indoxacarb application protocols and it is necessary to stop infestation and avoid replacement of turf. Subsequent or back-to-back treatments with Fipronil are prohibited. Fipronil may also be used to stop mole cricket infestation on fields used as test plots for biological or cultural control test sites.

VERTEBRATE CONTROL Cultural methods (Le. preventative and exclusion methods) are preferred. See *more in IPM Procedures, Section 10.*
Mole Control
• Bromethalin 0.025% (Talpirid or equivalent) - bait
Rodent control
• Brodifacoum 0.005% - (Talon®, Havoc® or equivalent) - bait
• Anticoagulant rat control baits* in secure boxes - (Brodifacoum, Bromadiolone, Difethialone)

FUNGICIDES
• Methoxyacetylamino Proprionic Acid 22% (Subdue® Maxx or equivalent)
• Iprodione 23.3% (Lesco® 18 Plus or equivalent)-limited for Dollar spot at croquet and lawn bowling fields

HERBICIDES (Landscapes in Parks, Medians, Street Trees)
• Glyphosate 53.8% (Rodeo® or equivalent) - nonselective control
• Oryzalin 40.4% (Surflan® AS or equivalent) - pre-emergent
• 2- Phenethyl Propionate 21.4%, Eugenol 21.4% (EcoEXEMPT® HC) - nonselective burndown
• Fluazifop-butyl 24.5% (Fusilade® II or equivalent) - grass control in broad leaf beds

HERBICIDES (Ditches, Rights-of-way, Roadsides)
Annual and Perennial weeds
• Glyphosate 53.8% (Rodeo® or equivalent) - roadside curbs and sidewalks
• Sulfometuron methyl 75% (Oust® XP or equivalent) - weeds in bullheads and medians

HERBICIDES (Athletic Fields, Non-Desirable Species in Athletic Turf Grass)

Nonselective weed control
• Glyphosate 53.8% (Rodeo® or equivalent) - nonselective control
• 2- Phenethyl Propionate 21.4%, Eugenol 21.4% (EcoEXEMPT® HC) - nonselective burn down
Nonselective weed control in turf
• Prodiamine 40.7% (Barricade® 4FL or equivalent) - pre-emergent
• Imazaquin 70% (Image® 70 OG or equivalent)
• Metasulfuron 60% (Manor® or equivalent - spot treatment)
• Foramsulfuron 2.34% (Revolver™ or equivalent) - spot treatment
• Metribuzin 75% (Sencor® 75 or equivalent)
Broadleaf weed control
• Carfentrazone-ethyl 0.54%, 2, 4-0 10.49%, Mecoprop 2.66%, Dicamba 0.67% (Speed Zone® Southern or equivalent)
• Carfentrazone-ethyl 0.62%,2,4-028%, Mecoprop 5.88%, Dicamba 1.71 % (Speed Zone® or equivalent)
Yellow and purple nutsedge
• Halosulfuron 75% (SedgeHammerTM or equivalent)

HERBICIDES (Canals, Storm water Ponds, and Aquatic Natural Areas)
Algae
• Copper 8.0% (K-Tea™ or equivalent) - algae control
Aquatic Weeds: Submerged
• Dipotassium Salt of Endothall 40.3% (Aquathol® K or equivalent), short-term pretreatment before planting
• Flouridone 5.0% (Sonar™ PR, Sonar™ Q, Sonar™ SPR or equivalent) - long-term hydrilla and other submerged weed species control
• Flouridone 41.7% (Sonar™ AS or equivalent) - long-term hydrilla control
Aquatic Weeds: EmergedC
• Glyphosate 53.8% (Rodeo® or equivalent) - nonselective, emergent aquatic weed control
• Imazapyr 28.7% (Habitat® or equivalent) - nonselective, emergent aquatic weed control for problematic species in monoculturesd
• Diquat Dibromide 37.3% (Reward® or equivalent) - contact, aquatic weed control
Broadleaf Aquatic Vegetatione
• 2, 4-046.8% (Weedar® 64 or equivalent) - woody vegetation and water hyacinth control
• 2, 4-047.3% (Platoon™ or equivalent) - woody vegetation and water hyacinth control

HERBICIDES (Natural Areas, Upland Parks)
Melaleuca, Brazilian Pepper, and other woody invasive species
• Glyphosate 53.8% (Rodeo® or equivalent) - nonselective control in upland areas or associated with wetlands or aquatic areas
• Imazapyr 28.7% (Habitat® or equivalent) - Melaleuca or other exotics associated with wetlands or aquatic areas
C Whenever possible the use of Glyphosate is preferred
d Whenever possible the use of Glyphosate is preferred but Imazapyr may be used for difficult species like parrot feather, torpedo grass, and other exotics with extensive rhizomes
e Whenever possible the use of Glyphosate is preferred • Imazapyr 28.7% (Arsenal® or equivalent) - cut stump treatment of melaleuca and other exotics
• Triclopyr 60.45% (Garlon® 4 Ultra† or equivalent) - cut stump and basal bark control of Brazilian peppers and other exotics
• Triclopyr 13.6% (Pathfinder® II or equivalent), ready to use cut-stump/basal bark for Brazilian Peppers and other exotics
Invasive grasses, vines, and other herbaceous species
• Glyphosate 53.8% (Rodeo® or equivalent) - nonselective control in upland areas or associated with wetlands or aquatic areas

• Imazapyr 28.7% (Arsenal® or equivalent) - upland areas
• Imazapyr 28.7% (Habitat® or equivalent) - in areas or associated with wetlands or aquatic areas
† Garlon 4® Ultra replaces Garlon 4® which may be used while available

Request for Approval of a Pest Management Product
IPM Form 2008·1
APPENDIX B: FORM FOR ADDITION OF A PEST MANAGEMENT PRODUCT
Requesting Activity Business center
Point of Contact Title
Telephone Fax Email
Product information1
Generic Name Trade Name
Class2 Formulation3
Ready to use? Yes No Active ingredient (%)
Target Pest And Proposed Sites(s) of use
(Attach additional sheet if needed)
Justification
(Attach additional sheet if needed)
Requester
Signature Date
IPM coordinator action: Approved Disapprove
Signature Date
1 Provide product label and MSDS with form to County IPM Coordinator
2 Example: Organophosphate; Pyrethroid, IGR, etc.
3 Example: Granular; Aerosol; Emulsifiable Concentrate