Santa Rosa Subregional Long-Term Wastewater Project

URBAN IRRIGATION MANAGEMENT GUIDELINES

SANTA ROSA SUBREGIONAL LONG-TERM WASTEWATER PROJECT

Prepared for

City of Santa Rosa
and
U.S. Army Corps of Engineers

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1.0 INTRODUCTION

The purpose of these Urban Irrigation Management Guidelines (UIMG) is to identify the general design procedures and implementation practices that will be utilized by the City of Santa Rosa to avoid any adverse impacts that might result from irrigation with reclaimed water on the urban landscape environment. Irrigation of urban landscaped areas with reclaimed water is a component of several long-term project alternatives. The particular landscaped areas included in the project (and identified in the project description) are currently being irrigated, so any project impacts would be related only to the change in the quality of the irrigation supply. The UIMG will be implemented by project cooperators (urban reclaimed water users) with periodic checks and, where deemed necessary, by water use audit conducted by staff of the cites in the regional system.

The elements contained in the UIMG are considered a part of the project description for all Urban Irrigation Project components. They will also apply to lands and facilities added to the system as part of the interim project. The provisions of this document therefore apply to all urban areas that will receive reclaimed water for irrigation. They anticipate what some project impacts may be from reclaimed water irrigation application without proper planning and management, and include provisions to minimize the possibility of such impacts occurring. As such, these provisions are "built-in" mitigation measures that the authors of the environmental impact sections will consider when evaluating and judging impacts. Additional mitigation measures may be identified as being necessary during their impact analysis and subsequent agency and public review.

Upon completion and certification of the EIR/EIS and selection of a project (if the Urban Irrigation component is selected), additional mitigations will be incorporated into an updated and revised UIMG. This document will then serve as part of the required Mitigation and Monitoring Plan (MMP), as well as in operational planning, management and design review. The MMP is a legal requirement of the CEQA process and is used to verify that all specified mitigation is implemented by identifying specific actions, parties responsible for their implementation, and monitoring and reporting requirements. As part of both the official project description and MMP, these guidelines are binding and enforceable during the life of the project, unless subsequently modified and approved by appropriate authorities.

2.0 BACKGROUND

Urban irrigation, or the use of reclaimed water to irrigate large commercial landscapes, school grounds, athletic fields and golf courses, is a component of the South and West County reclamation alternatives. Not only does irrigation with reclaimed water provide beneficial use and disposal, it is also a substitute for municipal water, thereby providing important water conservation benefits.

However, reclaimed water may contain higher concentrations of nitrates, salts and metals than the existing landscape irrigation supply. Unless managed appropriately, reclaimed water irrigation can lead to accumulations of these constituents in surface soils, or translocation to the shallow groundwater zone or nearby stream courses. Therefore, guidelines are needed to define the appropriate methods for application of reclaimed water.

The City's reclaimed water is of high quality and public health impacts from accidental/inadvertent exposure are thought to be minimal. However, reclaimed water that fails to meet Title 22 reclaimed water standards for its intended uses (for instance, from temporary system failures) could also conceivably have undesirable public health impacts, or perceptions of such. For that reason, design and construction guidelines will be developed to insure that the reclaimed water does not commingle with other potable or domestic drinking water through design or construction errors in pipeline and plumbing systems, and that the public is provided protection from direct exposure from spray irrigation. The design or construction guidelines will be based on Title 22 requirements, the Uniform Plumbing Code, and standards for the use of reclaimed water developed by the California State Water Resources Control Board.

3.0 REVIEW AND APPROVAL OF PROPOSED USES AND GENERAL CONSTRUCTION SPECIFICATIONS

The City shall determine whether a given service will be furnished with reclaimed water or potable water. The determination shall be in accordance with the standards of treatment and water quality requirements set forth in Title 22, Chapter 4 of the California Administrative Code, with the intent of the City to protect the public health and the environment, and with the availability of reclaimed water and the feasibility of making available reclaimed water facilities. In general, all construction plans and specifications should follow those outlined in:

- Standard Specifications for Public Works Construction (Latest Edition of Green Book) by the S. California Chapter of American Public Works Association and S. California District Association of General Contractors of California (BNI Publications, L.A.)

- Standard Plans for Public Works Construction. (Latest Edition of Green Book) by the S. California Chapter of American Public Works Association and S. California District Association of General Contractors of California (BNI Publications, L.A.)

- Uniform Plumbing Code (latest edition as adopted by the City), International Conference of Plumbing and Mechanical Officials, Los Angeles, CA.

- American Water Works Association (AWWA) California-Nevada Section, Standards for Distribution of Non-potable Water, 1994.

4.0 DESIGN APPLICABILITY GUIDELINES

The design guidelines for reclaimed water facilities are separated into four categories of reclaimed water facilities:

1. **Off-site Facilities.**

2. **Existing On-site Facilities.** To be converted from potable to reclaimed water; no size restrictions.

3. **New Small Scale On-site Facilities.** New facilities/new construction projects with total landscaped areas to be irrigated with reclaimed water less than five acres.

4. **New Large Scale On-site Facilities.** New facilities/new construction projects with total landscaped areas to be irrigated with reclaimed water over five acres.

Off-site reclaimed water facilities typically consist of facilities which are, or will be constructed, owned, operated, and maintained by the City, such as transmission or distribution mains in public right-of-ways and pumping stations. Typically, these facilities are on the upstream side of the water meter. On-site reclaimed water facilities typically will be constructed, owned, operated and maintained by the reclaimed water user, and are downstream of the water meter. The City will construct, operate and maintain reclaimed water facilities upstream of the water meter.[1] In certain cases, the City may also own and operate on-site facilities (parks), but in other cases the on-site facilities usually will be operated by other agencies or corporations. As a condition of receiving reclaimed water for urban uses, these entities will agree to abide by these guidelines to protect public health and the environment.

The specific irrigation system design guidelines and performance specifications (Section 5.0) apply to Categories 3 and 4, above. Submittal of irrigation plans following these guidelines is required only for new facilities. The landscape maintenance and management guidelines (Section 9.0) may apply to only Category 4, New Large Scale Facilities. The decision to require preparation and implementation of landscape maintenance and management plans (particularly for use of landscape chemicals) will be made by the City in consultation with the Regional Water Quality Control Board and the California Department of Fish and Game during CEQA review of specific projects, and in consideration of needs for stormwater management plans.

[1] Unlike agricultural irrigation projects, normally the City will not cost-share the construction costs and may change a service fee for reclaimed water.

5.0 DESIGN GUIDELINES FOR NEW ON-SITE RECLAIMED WATER FACILITIES

5.1 General

Design of all new on-site facilities (Categories 3 and 4) including, but not limited to, systems used for landscape irrigation, industrial processing, construction purposes or golf course irrigation shall conform to the provisions set forth herein and to any additional conditions, standards and requirements set forth by the City.

5.2 Design and Maintenance Manual References

The systematic application of landscape irrigation design techniques and management/ maintenance standards is critical to completing a successful and environmentally sensitive landscape management plan. Although there are many good landscape irrigation design and maintenance manuals available, the following are recommended for usage because they contain all of the required elements:

- Balogh, J.C. and W.J. Walker, Golf Course Management and Construction (1992), U.S. Golf Association, Lewis Publishing, Chelsea, MI.
- Bottcher, A.B. and L.B. Baldwin, General Guide for Selecting Agricultural Water Quality Practices (1986), Publication SP-15, AFAS, University of Florida, Gainsesville, FL.
- California Landscape Contractors Association, California Landscape Standards (1989), Sacramento, CA.
- California State University Fresno, Center for Irrigation Technology (CIT), Landscape Contractors Guide to Effective Irrigation (1989), Fresno, CA
- Jarrett, A.R., Golf Course and Grounds Irrigation and Drainage (1985), Reston Pub. Co., Inc. Reston, VA 159-171.
- Landscape Contractors Associations, Landscape Specification Guidelines, MD, DC, VA, Gaithersburg, MD
- University of California, Division of Agriculture and Natural Resources, UC IPM Pest Management Guidelines (1994), Publication 3365-T.
- U.S. Golf Association-Wastewater Reuse for Golf Course Irrigation (1994), Lewis Publishing, Chelsea, MI.
- Walker, E. Robert and William Smillie, Landscape Sprinkler Design, 1994. California Polytechnic State University, Irrigation Training and Research Center (ITRC).

5.3 Irrigation System Design for New On-site Facilities

A good landscape irrigation system design is the basis for good water management. A poor irrigation system design makes it very difficult to use irrigation water efficiently. The result can be problems with over-spray, runoff or excessive deep percolation to the groundwater. The design of the irrigation system is the foundation upon which the day-to-day operation must rely. Design errors or poor decisions in the initial design and construction/installation of an irrigation system may result in the loss of thousands of gallons of water over the life of the system. This lost water could enter the shallow groundwater, or run off the site.

"Good water management" means that nearly all of the water applied to landscapes through a well-designed and maintained irrigation system is used by the plants being irrigated. Application of the appropriate amount of water requires a knowledge of the plants' need for water, the water holding capacity of the soil, drainage characteristics, the quality of the irrigation water and the irrigation system's performance.

Landscape areas where good water management practices are used typically have the following characteristics:

- little or no runoff to streets and sidewalks;
- small amounts of deep percolation of irrigation water below the root zone of the plants; and,
- satisfactory appearance without significant wet or dry spots, or stressed vegetation.

Irrigation equipment and irrigation management capabilities have improved dramatically during the past decade. It is now possible to provide electronic or computerized irrigation scheduling controls for a site using different types of irrigation equipment (e.g., geared rotors, impact rotors, spray heads, microspray heads, drip, bubblers) for different landscape zones requiring separate management. However, the use of modern technology alone does not guarantee that the site will be efficient in its use of water and that environmental problems will be minimized. Although high tech equipment (in combination with a good design and installation) allows water to be applied uniformly across the site or to adjust the application amounts according to specific water needs of different planting zones, good management is also necessary to ensure that the water is applied when needed and in appropriate amounts, and that proper maintenance procedures are performed regularly.

5.4 Design and Performance Specifications

Good irrigation system design and construction are heavily dependent upon use of experienced professionals. To insure quality design and workmanship, irrigation plans should be prepared by a California licensed Landscape Architect. Installation should be performed by a California licensed

Landscape Contractor, with construction inspection and system testing by the project landscape architect.

New and innovative methods of irrigation design and management are encouraged. The use of drip or subsurface irrigation may prove effective in the reduction of total water consumption and control of unnecessary runoff and subflow by containment of the water to the landscape area.

The design of irrigation systems should include the following components:

A. The reclaimed water facilities should be designed to meet the peak moisture demand of all plant materials used within the design area. The irrigation system designs should allow for separate management of landscape areas with different water needs. Moisture sensors should be utilized to determine water needs, and should be coupled with an irrigation timer and software to accurately schedule irrigation events.

B. Reclaimed water facilities should be designed to prevent discharge onto areas not intended to be irrigated. Part circle sprinklers should be used adjacent to roadways and property lines to confine the discharge from sprinklers to the design area.

C. The total time required to irrigate the design area typically should not exceed eight hours in any 24-hour period. Irrigation systems should be designed to operate within this time frame.

D. Reclaimed water should be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the reclaimed water facilities should be compatible with the lowest infiltration rate present. Designs should be based on site specific soil evaluations for difficult sites (steep slopes, clayey soils, sites adjacent to creeks). Copies of soils test reports shall be made available to the City Engineer upon request.

E. Irrigation scheduling and application amounts should be determined based on the evapotranspirational needs of the landscape plants (crop coefficient) and the local site microclimates. Automated systems that integrate CIMIS climate and in-situ soil moisture monitoring data are preferred.

F. Avoid irrigation spray of public drinking fountains.

G The design of the system must include specific measures for cross-connection, prevention and testing.

5.4 Data Required on Irrigation Plans

A. Meter Data - The following information should be supplied for each reclaimed water meter and should be shown at each meter location on the plans.

- The meter location and size (inches).
- The peak flow through the meter (gpm).
- The (static) design pressure at the meter (psi).
- The total area served through the irrigation meter (square feet or acres).
- An estimate of the yearly water requirement through the meter (acre-feet).
- Street address for the meter.

B. Irrigation Equipment Legend - For irrigation systems, a legend showing the pertinent data for the materials used in the system should be recorded on the plans. The legend should include a pipe schedule listing pipe sizes and materials of construction, a listing of valve types including quick-coupling valves, and the following information for each type of sprinkler head:

- Manufacturer and model number.
- Sprinkler radius (feet).
- Operating pressure (psi).
- Flow (gpm).
- Sprinkler pattern.

The legend should also show the location of:

- Controllers/timers
- Moisture sensors

The sprinklers should be grouped into valves according to anticipated water usage by the selected plant materials. Actual material usage should be verified after installation to minimize runoff or over watering. A valve schedule indicating irrigation times should also be provided.

6.0 PLAN SUBMITTAL AND PLAN CHECK PROCEDURE FOR NEW ON-SITE FACILITIES

Achievement of the design and performance specifications including verification, construction quality, control and operations quality assurance will include the following elements:

1. Plan review.
2. In-field inspection and modifications.
3. Performance inspection.
4. Irrigation water audit.
5. Record drawings and as-built plans.

6.1 Plan Review

The submittal of reclaimed water use and landscape/irrigation plans for plan checking ensures that the proposed use of reclaimed water conforms to the approved uses, and that these design guidelines have been substantially met. The plan check procedure should be coordinated with the landscape planting plan review (for new plantings). Completed construction drawings for all new on-site reclaimed water systems must be submitted to the City for plan checking and approval before construction. If there are potable water systems within the design area, one set of blueprints and specifications of the potable water system facilities (or as-built drawings for existing systems) should also be submitted. Minor changes to the systems will be reviewed by the City Inspector. If major changes are made to the irrigation system, the owner, applicant or customer shall provide new plans showing the modifications to the system. The new plans shall be submitted to the City upon written request by the City Engineer.

6.2 Construction Inspection

The City will inspect the construction. In no case shall irrigation lines be backfilled before inspection by the City Inspector. If the on-site system is installed prior to plan approval and/or inspection, all or any portion of the system may need to be exposed and corrected as directed by the City Inspector in accordance with the standard specifications. Failure to comply may result in termination of service.

6.3 In-field Inspection and Modifications

Subsequent to plan approval, field conditions may dictate modifications to the on-site system either in material or in intended use. If directed by the City Inspector, the owner, applicant or customer shall perform all changes or modify the on-site system to bring the system or use into full

compliance with the design and performance specifications. If for any reason the system cannot be corrected or modified to the satisfaction of the City Inspector, the system may be subject to conversion to a potable water supply.

6.4 Performance Inspection

The owner, applicant or customer is responsible for monitoring and immediate control of over-irrigation, excessive percolation and runoff on new systems or systems requesting conversion. To ensure that overspray and runoff are controlled, when the sprinkler system is completed and the planting installed, the owner or owner's representative shall contact the City's Public Works Department and arrange for a coverage test and system performance walk-through. The owner or owner's representative must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the owner will be notified in writing of the changes required. All modifications to the system are the responsibility of the owner, applicant or customer who shall pay all costs associated with such modifications.

6.5 Irrigation Water Audit

The City may elect to conduct an audit of the reclaimed users on a bi-annual basis (or more frequently based on observations/complaints) to evaluate the system for problems of overspray, percolation and runoff. Depending on the findings, the City may require the submittal of a remedial measures plan covering redesign of sprinkler heads, operating pressures and irrigation scheduling. The landscape irrigation water audit will be performed by a California Department of Water Resources (DWR) certified auditor.

6.6 Record Drawings and As-Built Plans

Record drawings should be prepared by the reclaimed water user and show all changes in the work constituting departures from the original contract drawings including those involving both constant-pressure and intermittent-pressure lines and appurtenances. All conceptual or major design changes including any changes that may be affected by the requirements of these standard specifications, shall be approved by the City before implementing the change in the construction contract. Failure to receive prior approval may result in termination of service.

Upon completion of each increment of work, all required information and dimensions shall be transferred to the record drawings. Facilities and items to be located and verified on the record drawings will include, but are not necessarily limited to:

- Point of connection;
- Routing of sprinkler pressure lines;
- Gate valves;
- Sprinkler control valves;
- Quick-coupling valves;
- Routing of control wires; and,

- Other related equipment as specified by the City Inspector or the owner.

Changes and dimensions shall be recorded in a legible and workmanlike manner. Record construction drawings shall be maintained at the job site during construction. The applicant, owner or customer shall provide a complete set of "Record" plans to the City upon completion of construction. Prior arrangements must be made with the City if water service is to be provided prior to record blue line submittal. Failure to provide record drawings may result in termination of service.

7.0 CONVERSION FROM AN EXISTING ON-SITE POTABLE TO RECLAIMED WATER SUPPLY

In general, all irrigation facilities converting from a potable to a reclaimed water supply shall conform to Title 22 requirements. The facilities to be converted shall be investigated in detail by the reclaimed water user including a review of any record drawings, preparation of required reports and compliance with determinations by the City of measures necessary to bring the system into full compliance with Title 22 standards and the Uniform Plumbing Code. This may include, for example, installation of backflow prevention devices and installation of warning signs. The City will determine, in consultation with the reclaimed water user, which of the guideline's provisions are applicable to facilities which require substantial new redesign and construction of irrigation systems following conversion.

8.0 CONVERSION OF RECLAIMED WATER TO A POTABLE WATER SUPPLY

If due to any system failure, use violations or reasons as determined by the City, it becomes necessary to convert from a reclaimed water supply to a potable water supply, it shall be the responsibility of the owner, applicant or customer to pay all costs for such conversion including, but not limited to, the following items:

A. Isolation of the reclaimed water supply. Service shall be removed and plugged at the City main or abandoned in a manner approved by the City Engineer.

B. Installation of approved backflow devices on any and all meter connections.

C. Removal of the special reclaimed water quick-couplers and their replacement with approved quick-coupler valves for potable water systems.

D. Notification to all personnel involved.

E. Removal of reclaimed water warning labels.

F. Installation of labels to explain purposeful, but no longer applicable use of purple pipe.

G. Installation of all potable water lines and payment of all connection fees due.

9.0 LANDSCAPE MAINTENANCE AND MANAGEMENT GUIDELINES FOR NEW LARGE SCALE ON-SITE FACILITIES

Many large scale landscape maintenance practices could have an adverse impact on the environment. Movement of nutrients and pesticides or soil erosion from unprotected slopes could negatively affect water quality if allowed to enter groundwater or nearby streams in an uncontrolled manner and/or in significant amounts. These impacts can be minimized through the use of Best Management Practices (BMPs). The goals of BMPs are to: 1) reduce the off-site transport of sediment, nutrients and pesticides; 2) control the rate, application method and type (toxicity) of chemicals being applied; and, 3) reduce the total chemical load by use of Integrated Pest Management (IPM) . Good irrigation management is also good environmental management, and use of proper landscape practices contributes to proper irrigation management by keeping the landscape in a healthy condition that minimizes the need for chemical usage. The use of BMPs to protect water quality can be affordable, easily implemented and effective. While distinct BMPs are not readily identified for landscape areas, many of those suggested by the U.S. Department of Agriculture, Soil Conservation Service (Bottcher and Baldwin, 1986) can be adapted for use in landscape management situations.

9.1 Landscape Maintenance Plan and BMPs

As part of the agreement to deliver reclaimed water to a new large scale on-site facility the City may require the preparation of a brief landscape maintenance plan that will incorporate the following BMPs, where possible. This requirement will be made in consultation with the Regional Board and Department of Fish and Game as outlined in Section 4. The following BMPs should be considered for use in the Landscape Maintenance Plans.

Aquatic filter ponds and vegetated channels. Utilize ponds, basins or channels containing vegetation to filter or assimilate nutrients from drainage water.

Land absorption area. Provide an adequate land absorption area for drainage or runoff filtration so that soil and plants absorb nutrients. Surface drainage on golf courses should be filtered through turf areas. All drainage from impervious surfaces should be directed into areas with vegetative cover, where possible.

Grassed waterway or outlet. Use natural or constructed waterway or outlet maintained with vegetative cover in order to prevent soil erosion and to filter nutrients.

Critical area planting. Plant vegetation to stabilize barren soil areas and reduce erosion and runoff.

Resistant plant varieties. Use plant varieties that are resistant to insects, nematodes and diseases to reduce pesticide use. Where possible, use native plants adapted to the soil and climate of Sonoma County. Care should be taken in the selection of the turfgrass species and landscape cultivars best adapted for the soil, climatic and traffic intensity or use conditions of a site.

Cultural control of pests. Use cultural practices to partially substitute for pesticides. Details of the proper cultural practices including mowing, fertilization, irrigation and other practices should be included in the plan.

Soil testing and plant analysis. Test soil to avoid over-fertilization and subsequent losses of nutrients. All initial fertilizer recommendations should be based on soil testing and/or plant tissue testing. All subsequent fertilization programs should be finalized based on a minimum sampling program consisting of annual soil analyses.

Timing and placement of fertilizers. Time and place fertilizers for maximum utilization by plants and minimum leaching or movement by surface runoff. Use caution in fertilization timing. Schedule to avoid rainfall which could promote runoff and/or leaching. Verify application rate through proper calibration of equipment and choice of materials.

Slow release fertilizer. Apply slow release fertilizers to minimize nitrogen losses from soils prone to leaching. All fertilization programs should include the use of slow release nitrogen fertilizer, whenever possible.

Irrigation water management. Determine and control the rate, amount and timing of irrigation water application to minimize soil erosion, runoff and fertilizer and pesticides movement. The irrigation system should be designed to have an average application rate below the infiltration capacity of the soil so that no surface ponding will occur and maximum efficiency of water percolation will be achieved. All irrigation will be based on the water balance method, which takes into account plant water use, as monitored by environmental conditions, soil drainage and natural rainfall.

Biological control of pests. Use natural enemies as part of an Integrated Pest Management (IPM) program to reduce the use of pesticides. While biological controls that provide effective pest management for turf grasses are limited, whenever practical these should be included in the program. For example, parasitic nematodes and bacteria/toxins for insect control are available.

Pesticide selection. Select pesticides which are less toxic, persistent, soluble and volatile whenever feasible. All pesticides selected for use should be screened for their potential to be sources of non-point pollution. Only materials which have a documented margin of safety should be used.

Correct application of pesticides. Spray only when conditions for drift are minimal. Avoid application when rain is forecast. Irrigate with appropriate volumes of water when specified. All of these conditions as well as proper calibration of equipment should be scrutinized at every pesticide application by the golf course superintendent.

Correct pesticide container disposal. Follow accepted methods for pesticide container disposal.

9.2 Landscape Maintenance Guide.

The following components should be included in the Landscape Maintenance Plan for areas receiving reclaimed water:

Soil Analysis. Sample representative landscapes and soils for analysis and recommendations. The primary purpose of soil testing is to insure a sound fertilizer program based on nutrient availability and balance for good growth of the plants. Soil pH, boron and salinity should also be evaluated annually to assist in management of salts present in reclaimed water. A healthy plant is less susceptible to disease and other pests.

Fertilizing. The fertilizer program should be based on soil test results for pH, soil nitrogen, calcium, magnesium, phosphorus and potassium. Nitrogen fertilization should be determined by color, density and the rate of growth of the grass as well as soil nitrogen.

Mowing. With good mowing practices, density, texture, color, root development, wear tolerance and other aspects of turf quality are enhanced and water use efficiency maximized.

Irrigation Program. Each time water is applied, operate the system only long enough to wet the soil to the depth of rooting. When turf areas are stressed, hand water during the heat of the day in addition to regular night irrigation. Consider the need to manage salt accumulation and match application rates with plant water use coefficients and proper leaching requirements.

Spiking. This procedure is used to relieve surface compaction and ensure good gas exchange (oxygen and carbon dioxide) and infiltration.

Vertical Mowing. During the growing season, this operation is used to reduce mower induced grain and thatch build-up.

Aerifying. Aerifying surfaces relieves compaction, increases soil and surface air exchange and improves fertilizer and water movement into the soil.

Overseeding/Topdressing. This is done to improve stand densities on areas where traffic and/or pest problems may have caused a thinning of the turf. In addition, topdressing can be considered periodically to improve turf health.

Wetting Agent Applications. If localized dry spots appear, apply a good quality wetting agent and water immediately to prevent yellowing of the grass. During this period, use a wetting agent when applying a liquid fertilizer or pesticide unless the label states otherwise.

Weed Population. Monitor periodically for beetles, grubs, caterpillars and other insect pests. However, do not treat unless the pest is found, identified and present in damaging numbers.

Disease Control. During periods when disease or climatic conditions favoring a disease outbreak are prevalent, inspect the surfaces and treat only as necessary.

Pesticide Applications.

- Pesticides should be handled, applied and disposed of by a licensed spray technician (PCA).
- Only approved and legal chemicals shall be used. All county, state and federal guidelines must be strictly adhered to regarding storage, handling and application of pesticides.
- Only proper equipment should be used for application. This equipment should be maintained and in proper calibration.
- A controlled and designated area/facility should be used for the proper mixing and loading of pesticides into application equipment. The facility should consist of an impermeable pad with controlled and contained drainage, and should be at least 50 feet from open ditches,ponds or open water bodies. Rinse water should properly stored and hauled for disposal at an approved facility.
- Selection of pesticides should be based on the ability to achieve treatment goals and criteria to minimize off-site movement. Selection of less toxic, less mobile and less persistent pesticides should be a priority management criterion.
- Pesticide applications should be carefully timed and combined with other pest management practices; pests should be accurately identified and pesticide applications made only when necessary, using the least amount required.
- Pesticides should not be applied when soil moisture is high during the rainy season. Applications should be restricted prior to any anticipated late or early season storm events to preclude potential impacts from runoff.
- Where possible, a vegetated buffer area should be maintained between all surface water impoundments and water courses and areas of application.