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The Essential Maintenance Manual



*A basic gardening guideline for
maintaining your landscape in northern
Nevada and the Sierra.*

www.moananursery.com

Moana Lane Garden Center
The Florist, Greenhouse & Gift Shop
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I. INTRODUCTION:

Now that your landscaping project is finished, it is time to decide on a care plan that will allow your landscape to thrive and your investment to grow. While gardening is not rocket science, it does require regular maintenance and attention to Mother Nature's subtle and not so subtle signals.

This guide is designed to provide **basic** information and instruction on the routine maintenance of your plant material, irrigation system, hardscape, water feature and more. It is not intended to address every possible landscape issue, scenario, problem or question (if it were, the manual would be over 1,000 pages). Included in the closeout package is a corresponding **Essential Maintenance Calendar** that provides the approximate time frames of the recommended activities. For more detailed and time specific instructions we recommend following Moana Nursery's Timely Tips that are released every two weeks. These can be found on our website and are also included in our e-newsletters.

No matter what type of gardener you are or want to be, Moana Nursery is committed to being your partner in growing your landscape into a property you will love. We believe that there are three basic types of gardeners and we are ready to help all three.

For the **Do-It-Yourselfer**, our Garden Centers are stocked with the best performing products and an expert staff that will help make your maintenance efforts a success. In addition, we have developed a massive reference library that specifically addresses landscaping in the High Desert & the Sierra. Available 24 hours a day on our website, it

includes specific Timely Tips, High Desert Fact Sheets, past E-Newsletters, a link to our blog and Plant Finder, the definitive knowledge bank for specific plant species in northern Nevada. For more hands on learning we offer free weekly seminars on a variety of topics and staff all of our nurseries with local horticultural experts. We even offer an At-Home Consultation service with our Plant Doctors for a nominal fee.

For the **Practical Gardener**, we offer a wide variety of services including irrigation shut downs, startups, repairs, yard clean ups and more to make maintaining your landscape easier. If you want the satisfaction of maintaining your property but just need a little extra help this is for you. Give us a call and we'll help you have your property looking great in no time without a long term maintenance commitment.

For the **Garden Lover a.k.a. "Garden Observer,"** we offer full service landscape maintenance packages so you can just enjoy having a wonderful yard. If we don't have the service you are looking for, we'll refer you to a great company that does.

II. GENERAL:

Gardening in northern Nevada and the eastern Sierra can be a challenging and often intimidating experience. This area is high desert and high altitude with extreme fluctuations of night and day temperatures. It has high intensity sunlight and humidity is generally low. These features combined with rapid and extreme weather changes, early warm up, late killing frost, short 90 to 100 day growing season, high winds, lengthy periods without natural precipitation, and



poor soil conditions further exacerbate the challenge of maintaining your landscape.

This doesn't mean that it is impossible to have a property with beautiful trees, flowering shrubs and a lush green lawn; it just takes a little more effort and know how.

Before getting started there is some basic terminology that will be utilized throughout this manual.

Establishment Period: The time necessary for a new plant to acclimate to its new environment after installation. This is the first benchmark of all new plantings and is the most critical aspect for success. During the establishment period it is imperative that the plant receives adequate water, nutrients, sunlight, and protection. Each section of the manual provides a general overview of the different care instructions required during the establishment period.

Established: Plants are generally considered established once they have rooted into the growing medium (soil) and are producing new growth. Once a plant is established, its care changes dramatically and the risk of death is substantially reduced.

Root Zone: The soil surrounding the plant's roots serves as a storage tank from which the plant draws moisture and nutrients.

Hydrozone: Irrigation groupings or zones based on plant needs, micro climate and water application (precipitation) rates. Hydrozones could include turf, tree, shrub, sunny, shade-plant, mixed plant, containers, annuals and vegetable zones. The intent of hydrozones is to apply accurate amounts of irrigation to your plants.

Irrigation Scheduling: The process to determine the correct frequency and duration of watering required to maintain a landscape. The irrigation schedule accommodates the needs of various plant types and locations on a property. True plant watering schedules should be based on the EvapoTranspiration rate (the amount of water that evaporates from the soil combined with the amount of water that transpires through the plants) and the precipitation rate (the amount of water applied during a specific period of time). The EvapoTranspiration (ET) rate is a variable that changes daily based on temperature, wind, solar radiation, natural precipitation, humidity levels, and soil conditions.

When to Water: Simplifying the science is as easy as sampling the soil to evaluate the moisture content available in the root zone. If the soil is dry the plants most likely need water; if the soil is moist the plants typically have enough available water and if the soil is saturated the plants probably have too much water.

General Signs of Under-Watering:

- Soil is dry
- Older leaves turn yellow or brown and may drop off
- Leaves are wilted and/or curled

General Signs of Over-Watering:

- Soil is constantly damp
- Young leaves become light green or yellow
- Young shoots are wilted
- Leaves are green yet brittle
- Algae and mushrooms are growing



III. TREES AND SHRUBS:

Trees and shrubs provide the backbone of landscapes. In addition to adding to the overall aesthetics of a property, they provide shade, purify our air and create some necessary privacy. They are also the most significant investment you will make in your property and the only one whose value will increase exponentially as time goes on. For example, it is not uncommon for Moana Nursery arborists to value an existing tree at \$10,000 or more when mature.

Most trees and shrubs commonly go through a period of stress during the establishment period, commonly referred to as “transplant shock.” Transplant shock is due in part to the tree or plant moving from one location to another and is most prevalent in summer months when the temperatures are hot. The digging and agitation of roots that is normal during the transplanting process can also contribute to a temporary decline in appearance of newly planted trees and shrubs (such as early defoliation of leaves and needles). The best way to off-set transplant shock is to properly irrigate a newly planted tree or shrub during the establishment period.

Average Length of Establishment Period:
One growing season.

A. WATERING TREES & SHRUBS:

Watering trees and shrubs is the most important factor in their success. It is just as easy to overwater as it is to underwater a tree or shrub. Trees and shrubs that are overwatered drown when the roots are deprived of oxygen in the soil. For general

signs of under watering or overwatering review section two.

Most trees and shrubs shed rain water to the “drip line,” much like an umbrella. The most active water absorption area is at the drip line and beyond. This is where water should be applied; not close to the trunk.

To best irrigate plants in our region we recommend drip irrigation. Most newly planted trees receive 4 – two gallon per hour drip emitters (supplying a total of 8 gallons of water in a one hour period) while a typical shrub will receive 2 or 3 one gallon per hour drip emitters (supplying a total of 2 or 3 gallons of water in a one hour watering period). Irrigating trees using conventional sprinklers can be done, but is not nearly as effective or efficient as using drip irrigation.

When and how much irrigation to give a plant species depends on many variables: the needs of the particular species, its size and age, the soil composition, time of year, sun exposure, humidity, and the amount of water it may get from other sources (natural precipitation).

Establishment Period Trees & Shrubs:

During the establishment period, trees need to be watered frequently so that their root ball stays moist and the roots can begin to grow after being transplanted; this will minimize “transplant shock.” Moana Nursery recommends that trees and shrubs be irrigated via drip irrigation at the following rates:

Daytime Temperatures Less Than 75 Degrees:

3-5 days per week, 30-60 minutes at a time. This may be split into two shorter periods of time each day (e.g. 20 minutes twice during the day)



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Daytime Temperatures Greater Than 75 Degrees:

*4-6 days per week, 60-120 minutes at a time.
This may be split into two shorter periods of time each day (e.g. 40 minutes twice during the day)*

Established Trees & Shrubs:

Once trees and shrubs are established they should be deep root watered to encourage root development below the surface. To effectively deep root water a tree or shrub, it must be watered relatively infrequently and for a significant period of time. This type of watering saturates the root zone while allowing the water to evaporate from the top of the soil. Deep root irrigation forces feeder roots to grow deeper into the ground, chasing the water left in the root zone. Moana Nursery recommends that established trees and shrubs be irrigated via drip irrigation at the following rates:

Daytime Temperatures Less Than 75 Degrees:

1-2 days per week, 45-60 minutes at a time

Daytime Temperatures Greater Than 75 Degrees:

2-4 days per week, 60-120 minutes at a time

As trees and shrubs grow it is imperative that the amount of water is increased and the location of the water changed. This should correspond to the growth of the plants. Moana Nursery recommends that every spring a full verification of the drip irrigation system is conducted to ensure even and accurate distribution of water to each tree and shrub. Drip emitters should effectively water the drip line; in order to do this, emitters need to be moved and/or added as the plant grows.

B. FERTILIZING TREES & SHRUBS:

Tree and shrub fertilization is especially important where soils have been altered due to construction or are naturally deficient of nutrients. These soils tend to be heavily compacted, poorly aerated, poorly drained, and devoid of organic matter. Even where soils have not been affected, fertilization is needed as part of a maintenance program to increase plant vigor or to improve root or top growth. This is normally the case in our region due to overall poor soil quality.

All of Moana Nursery's trees and shrubs are planted with **Gro Power™**, a slow release fertilizer and soil conditioner, **SUPERthrive**, a nutrient rich supplement that helps roots grow and minimizes transplant shock and **G&B Organics Soil Building Conditioner**, an organic soil amendment. With this combination of fertilizer, nutrients and soil amendment there is no need to fertilize your trees and shrubs during the first year.

Establishment Period Trees & Shrubs:
No fertilization required during first year.

Established Trees & Shrubs:
*Fertilize trees and shrubs every two months with **G&B Organics All Purpose Fertilizer** or **Gro Power™** from March through September.*

Established Roses:
*Fertilize roses every two months with **G&B Organics Rose & Flower Fertilizer**. The first fertilization should coincide with rose pruning which normally occurs around the 15th of April.*

C. PRUNING TREES & SHRUBS:

Pruning of trees and shrubs aids in the proper formation of the overall structure and promotes health and vigor. In addition, pruning is essential in preserving the integrity and scale of your landscape design. Regular, correct pruning keeps shrubs and trees healthy and vigorous as well as prevents potential problems. Properly pruned flowering shrubs not only blossom profusely year after year, but also remain a desirable size. Like all maintenance activities regular selective pruning is easier and less work than major pruning required when plant material is not maintained.

Newly planted trees and shrubs have been selectively pruned since they were seedlings and will not need any pruning for the first full year. Once the tree or shrub is established it is acceptable to prune.

The timing for pruning trees and shrubs depends on the species of plant. Proper timing helps to ensure desired results from pruning. Pruning at the wrong time of year can also harm trees and shrubs. In addition, the quality of the bloom as well as size, shape and aesthetics of the plant can be ruined if pruned at the incorrect time.

Damaged limbs and branches should be pruned immediately to prevent disease.

Establishment Period Trees & Shrubs:

No pruning required during first year, unless damage occurs to tree or shrub.

Established Trees & Shrubs:

Moana Nursery recommends the following pruning schedule based on the type of tree or shrub. For additional information see Moana

Nursery's "Proper Timing for Pruning" Fact Sheet.

Deciduous Shade Trees:

*These trees can be pruned at almost any time except when the trees are leafing out (spring). However, it is best to prune in **late fall through midwinter** as the sap flow is more stable and the tree is less likely to experience excessive bleeding.*

Fruit Trees:

*These trees should be pruned in **early spring before bloom or new growth occurs.***

Ornamental Flowering Trees:

*These trees should be pruned **after flowering is finished.***

Evergreen Trees:

*These trees should be pruned in **late winter or early spring before new growth begins**, or in mid to late summer, after growth has stopped.*

Flowering Shrubs:

*Most bloom on the previous year's wood; pruning should be done immediately **after flowering is finished.** However, some bloomers like Flowering Quince, Alpine Currant, Pyracantha and Ninebark should be pruned in **early spring prior to the bloom or new growth.***

Roses:

*Roses and other plants that bloom on the current season's growth should be pruned in **the spring before growth starts, normally around April 15th.***

Non-Flowering Shrubs:

*These shrubs can be pruned at almost any time except when the shrubs are leafing out; however, it is best to prune in **late winter prior to new spring growth.***



D. TREE STAKE REMOVAL

In our region tree staking is primarily installed to protect the trees from high winds: this is called Anchor Staking and is not necessary for all trees. The other type of staking that Moana Nursery recommends is Support Staking. This type of staking is installed if the tree has a floppy trunk that is not self-supporting, support stakes will be needed (this is more typical with faster growing trees like Aspens).

In general Moana Nursery does not recommend staking newly planted trees because the tree stakes can prevent the development of its roots and often cause more damage than assistance over the life of the tree. However, our region's high winds normally force us to stake the majority of trees we plant.

Stake Removal

Remove stakes, usually after the first year and no longer than two years after planting. Support staking should be removed when the trunk of the tree is strong enough to hold its canopy up on its own. This is usually occurs after the first year as well.

IV. PERENNIALS & ORNAMENTAL GRASSES:

Perennials and ornamental grasses are the accessories to your trees and shrubs. These plants can make your landscape pop with color, interest and diversity. These two plant types have different growth patterns, water requirements, and maintenance schedules. In order to keep them looking their best care needs to be applied differently for each category.

Average Length of Establishment Period:
One growing season.

A. WATERING PERENNIALS & ORNAMENTAL GRASSES:

Watering perennials and ornamental grasses is the most important aspect of their success. It is just as easy to overwater as it is to underwater these species. Perennials and ornamental grasses that are overwatered drown when the roots are deprived of oxygen in the soil. For general signs of under-watering or overwatering review section two.

Like trees and shrubs Moana Nursery recommends watering these plants via drip irrigation. Irrigating this plant material using sprinklers is not as effective or efficient as using drip irrigation.

Perennials and ornamental grasses may be in the same hydrozone as trees and shrubs. To differentiate the amount of water distributed to these plants, smaller sized emitters are used (mainly ½-gallon per hour and 1-gallon per hour emitters) and fewer of them (normally two), compared to trees which normally receive four 2-gallon per hour emitters. This moderates the amount of water each plant receives as they grow; adding a drip emitter is an easy way to increase the water quantity.

Establishment Period Perennials & Ornamental Grasses:

During the establishment period these plants need to be watered frequently so that their root balls stay moist and the roots can begin to grow after planting. Moana Nursery recommends that perennials and ornamental grasses are watered via drip irrigation at the following rates:



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Daytime Temperatures Less Than 75

Degrees:

3-5 days per week, 45-60 minutes at a time.

This may be split into two shorter periods of time each day (e.g. 25 minutes twice during the day)

Daytime Temperatures Greater Than 75

Degrees:

4-6 days per week, 60-120 minutes at a time.

This may be split into two shorter periods of time each day (e.g. 40 minutes twice during the day)

Established Perennials & Ornamental Grasses:

Once these plants are established they should be deep root watered to encourage root development below the surface. Moana Nursery recommends infrequent watering via drip irrigation at the following rates:

Daytime Temperatures Less Than 75

Degrees:

1-2 days per week, 45-60 minutes at a time

Daytime Temperatures Greater Than 75

Degrees:

2-4 days per week, 60-120 minutes at a time

B. FERTILIZING PERENNIALS AND ORNAMENTAL GRASSES:

All of Moana Nursery's perennials and ornamental grasses are planted with **G&B Organics Starter Fertilizer or Gro Power™**, a slow release fertilizer, **SUPERthrive**, a nutrient rich supplement that helps roots grow and minimizes transplant shock and **G&B Organics Soil Building Conditioner**, an organic soil amendment. With this combination of fertilizer, nutrients and soil amendment there is no need to fertilize your perennials and ornamental grasses during the

first 2 months; however, unlike trees and shrubs it is beneficial to apply regular fertilizer applications during the establishment period.

Establishment Period Perennials:

*Fertilize perennials every two months with **G&B Organics Rose & Flower Fertilizer** from March through September. First application should take place no earlier than 2 months after planting.*

Establishment Period Ornamental Grasses:

*Fertilize ornamental grasses every two months with **G&B Organics All Purpose Fertilizer or Gro Power™** from March through September. First application should take place no earlier than 2 months after planting.*

Established Perennials:

*Fertilize perennials every two months with **G&B Organics Rose & Flower Fertilizer** from March through September.*

Established Ornamental Grasses:

*Fertilize ornamental grasses every two months with **G&B Organics All Purpose Fertilizer or Gro Power™** from April through September.*

C. PRUNING PERENNIALS & ORNAMENTAL GRASSES:

Pruning perennials and ornamental grasses is an important aspect of continued growth, plant health and more blooms. There are two types of pruning associated with these plant categories.

Deadheading Flowers:

Deadheading is the process of removing dead or past prime flowers to improve the general appearance or encourage new bloom development. Deadheading should be done





throughout the blooming season to ensure consistent blooms.

Cutting Back:

Cutting back these herbaceous plants to 2 – 6" above the ground is how the growing season should be concluded. This is also the first step in preparing for the following year's season.

Cutting Back Perennials:

*October through December, unless the perennial provides winter interest or food for the birds, Moana Nursery recommends applying 2-3" layer of **G&B Organics Soil Building Conditioner** over the root zone to help insulate the roots of the perennials throughout the winter months.*

Cutting Back Ornamental Grasses:

Ornamental grasses provide late fall and winter interest. Moana Nursery recommends cutting back grasses in late February or early March prior to the new growing season.

V. PLANTING BEDS:

Moana Nursery defines planting beds as anywhere that plants or trees are growing and not surrounded by lawn or in a container (such as pottery). Planting beds can be bare soil, covered in organic mulch (bark, compost, nutrient rich top soil) or inorganic mulch (rock, decomposed granite "DG", rubber).

A. GROUND COVER MULCH:

Organic mulch is better for the overall health of your soil and plants because it continues to add vital nutrients into the soil as it decomposes and moderates the soil

temperature, protecting roots from severe heat and cold. In most cases it is lighter and easier to install and work with. However, it needs to be refreshed regularly, can be wind-blown, changes color over time, and can be messier than non-organic mulch during the winter months. Moana Nursery recommends **G&B Organics Soil Building Conditioner** for organic mulch applications. *For more information about Soil Improvement read Moana Nursery's High Desert Fact Sheet "Nevada Soils."*

Inorganic mulch lasts substantially longer, but will need to be refreshed over time (years not months). It controls erosion better than organic mulch and poses no fire risk. However, it is difficult to work with; it is not as easy to move as light organic mulch. It adds no nutrient value into the soil and it produces radiant heat as the mulch absorbs the heat from the sun raising the temperature of nearby plants and soil.

Moana Nursery carries a wide variety of organic and inorganic mulches in bulk quantities at Moana Rock, located in our South Virginia Street Garden Center.

B. WEED CONTROL:

No matter what type of mulch is utilized, planting beds require maintenance to be free of weeds

Similar to lawns there are two types of weed control applications: pre-emergent and post-emergent.

Pre-emergent applications are designed to prevent weeds from germinating, while post-emergent applications are designed to kill





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existing weeds. To keep any planting bed weed free requires the use of both.

Pre-Emergent Applications: *Apply Amaze Granular Pre-Emergent or Weed Impede Liquid Pre-Emergent in late winter or early spring. If possible, apply prior to a moisture event (rain or snow). The water activates the pre-emergent. If the forecast is dry, use the garden hose to apply an even amount of water over the entire planting bed.*

Post-Emergent Application: *Apply Bonide KleenUp as necessary.*

C. CRITTER CONTROL/PREVENTION

Nothing can be more frustrating than planting a new tree, shrub or perennial and seeing it half eaten the very next day. Critter prevention is an important aspect of landscape maintenance and is one of the most difficult. A new landscape is an inviting buffet for deer, rabbits, voles, squirrels and chipmunks. Preventing these animals from eating your landscape is a challenge and in some cases an impossible job. There is no silver bullet that will completely eliminate critters; however, there are maintenance products that will help minimize critter activity in your landscape. This could include the use of animal repellents, installation of rabbit fencing, replacement of certain plant species, and potentially hiring an exterminator. If critters are a problem, the first step in critter control should be animal repellent.

Moana Nursery recommends **Plantskydd Granular and Plantskydd Deer Repellent**, to help minimize critter destruction. This highly effective, 100% natural product emits an odor that animals associate with predator

activity, repelling animals before they nibble on plants. This product is safe for use in vegetable gardens, on fruit trees and food crops.

VI. LAWN:

A lush, healthy lawn will provide numerous benefits to your landscape, including adding aesthetic value, producing oxygen, lowering summer temperatures, filtering water run-off, cleaning the air and much more.

With cool nights and abundant sunlight, our region is ideal for growing cool season grasses which include bluegrass varieties, turf fescues, fine fescues and perennial ryes. Most residential lawns in our area are a mixture of bluegrass and fescues. It is much more common and practical to install previously grown sod rather than starting from seed. Seeding can be accomplished, but it requires additional care, water, and time. Moana Nursery recommends laying sod grown at a local turf farm.

Soil preparation is an important factor in the overall health of any turf. While turf can grow on poor soil, it will require more water, fertilizer, and maintenance. Moana Nursery recommends amending the soil prior to installation of turf for healthier lawns.

Average Establishment Period:

Depending on the season and soil, it normally takes between six and twelve weeks for sod to establish in a new area. The keys for any establishment period are water and soil preparation.





A. WATERING LAWN:

Sufficient moisture is the most essential element in promoting good root growth early and to prevent newly laid sod from drying out. Newly transplanted sod needs to be closely monitored to help overcome the shock of transplanting.

Establishment Period:

During the establishment period it is necessary to keep the new sod moist and not let it dry out. A dried piece of sod is a dead piece of sod during this critical period. The water required depends primarily on the temperature, but also on the soil type, slope, and specific micro-climate. To establish new turf areas the grass must never dry out. Based on the season and irrigation type, an establishment watering schedule may be as often as 5 times per day in increments as short as 5 minutes to as long as 45 minutes (depending on the irrigation system).

The three primary types of turf irrigation that Moana Nursery utilizes are pop-up sprays, rotors, and subsurface drip irrigation.

Daytime Temperatures Less Than 75 Degrees:

- **Pop-Up Spray:** 5-7 days per week, 3 times per day, 5-10 minutes at a time
- **Rotors:** 5-7 days per week, 3 times per day, 20-45 minutes at a time
- **Subsurface Drip:** 5-7 days per week, 3 times per day, 30-45 minutes at a time

Daytime Temperatures Greater Than 75 Degrees:

- **Pop-Up Sprays:** 6-7 days per week, 3-5 times per day, 5-10 minutes per run time
- **Rotors:** 6-7 days per week, 3-5 times per day, 20-45 minutes at a time

- **Subsurface Drip:** 6-7 days per week, 3-5 times per day, 30-45 minutes at a time

This establishment period lasts until the roots have grown into the soil and it becomes extremely difficult to lift up a piece of the turf; usually between 6 and 12 weeks.

Established Lawns:

Once a lawn has fully established the watering can be reduced dramatically.

Daytime Temperatures Lower Than 75 Degrees:

- **Pop-Up Sprays:** 2-3 days per week, 2-3 times per day, 5-10 minutes at a time
- **Rotors:** 2-3 days per week, 2-3 times per day, 20-45 minutes at a time
- **Subsurface Drip:** 2-3 days per week, 2-3 times per day, 30-45 minutes at a time

Daytime Temperatures Greater Than 75 Degrees:

- **Pop-Up Sprays:** 2-3 days per week, 3-5 times per day, 5-10 minutes at a time
- **Rotors:** 2-3 days per week, 3-5 times per day, 20-45 minutes at a time
- **Subsurface Drip:** 3-5 days per week, 2-3 times per day, 30-45 minutes at a time

Contrary to popular belief, lawn is not the cause of water wasting. Water wasting is caused by inefficient irrigating, primarily overwatering. Properly scheduling an irrigation system will dramatically reduce overall irrigation usage on any system.

Moana Nursery recommends watering lawns between the hours of 4am and 8am to reduce water waste caused by evaporation and wind; this also minimizes conditions favorable to many lawn diseases.

B. MOWING LAWNS:

Mowing correctly is one of the keys to a nice looking lawn. Cool season grasses require that no more than 1/3 of the blade is removed. The lawn should be mowed to a height of 2-3 inches. Mowing shorter reduces food manufacturing potential, stresses the plant and encourages a shorter root system. Mulching mowers are recommended and return a lot of nutrients to the soil through clippings without increasing thatch build up.

Establishment Period:

After your new lawn is installed, wait until the grass is growing vigorously before mowing for the first time. Check that the sod has rooted into the soil by gently tugging on a corner. You should feel resistance. Mowing will help stimulate root growth and is an important part of the establishment period. The day prior to mowing reduce the amount of water the turf receives in order to reduce water content in the soil. This will prevent ruts and tracks which are difficult and costly to repair.

The first few times you mow, run the mower perpendicular to the direction the sod strips were installed. Set the lawn mower wheels at 3" or higher to prevent cutting the grass too low. This is especially important during the hot, dry months of summer.

After 3 weeks the lawn can take light traffic but avoid heavy traffic until the lawn is a little more established - usually between 6 and 12 weeks.

Established Lawns:

Weekly or bi-weekly (based on preference) starting approximately March 30th until October 31st, Moana Nursery recommends that the grass is mowed in a different direction each time

C. FERTILIZING LAWNS:

Turf grasses are heavy feeders and require regular applications of nitrogen, phosphorus, potassium and usually some iron. Overfeeding can create an overly lush lawn that requires more frequent mowing and an increased susceptibility to disease and insect attack. Lawns in our area require approximately 4 lbs. of actual nitrogen per 1,000 square feet of turf per year.

Some fertilization programs recommend different types of fertilizers based on the season. Moana Nursery recommends a simpler more environmentally conscious program using an organic fertilizer.

Establishment Period:

No fertilization required. New turf is installed with a starter fertilizer.

Established Lawns:

*Every 2 months apply **G&B Organics Lawn Fertilizer** from March through September.*

D. WEED CONTROL OF LAWNS:

The best defense against lawn weeds is a healthy, thick lawn. Weeds quickly invade a thinning lawn. There are two types of weeds found in lawns and proper identification is critical for control. Broadleaf and grassy weeds can be either annual or perennial weeds. They can be controlled with a combination of pre-emergent and post-emergent applications of herbicide. Pre-emergent applications prevent weeds from germinating while post-emergent sprays kill existing weeds.





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Weeds of all kinds can be mechanically controlled by digging. Care must be taken to remove the entire root system or it will simply re-grow.

Establishment Period:

Pre-Emergent Application: Not required.

Post-Emergent Application: Not recommended until lawn is established.

Established Lawns:

Pre-Emergent Application: Apply **Bonide Complete**

Granular Pre-Emergent from January through mid-March.

Post-Emergent Application: Apply **Bonide Weed Beater Ultra** or **Weed Beater Plus** as needed to eliminate broadleaf and grassy weeds.

E. DETHATCHING OF LAWNS:

A thin layer of thatch is referred to as mat. This mat is good because it adds some resiliency or cushion to the lawn. If this mat becomes a half-inch or more layer of live and dead tangled roots, leaves, rhizomes or stolons, it is called thatch, and it interferes with the healthy growth of grass. At this point it is necessary to rid the lawn of the layer.

Thatch can cause a variety of problems. It upsets the water movement into the soil. Water runs off rather than soaking in and the grass dies. Seeing burnt grass, a homeowner may start to water more but for shorter periods of time. This causes the grass roots to grow closer to the surface and results in more thatch buildup. The grass, with its roots close to the surface and wet most of the time,

becomes weakened and prone to heat damage and disease. The lawn can start to form yellow blotches and die when thatch gets too thick. Thatch provides a warm, moist area for fungus to grow and traps most of the fertilizer and pesticide applications.

Thatch buildup is not just the result of poor irrigation practices, but a combination of many factors that include compaction, mowing the grass too short (less than one inch for most grasses), light, frequent watering and over-fertilization, particularly in the summer. The most effective way to reduce thatch is by core aeration. Power raking is also used but is not as effective.

Aeration of Lawns:

Aeration is a process of plugging holes in a lawn with a machine; it reduces thatch and compaction. Even though it does not remove as much thatch at one time as does dethatching, it is much more beneficial as it removes a core through the thatch allowing air and water to infiltrate into the lower root zone and soil. Power raking or dethatching only removes the upper layer of thatch and leaves the lower layer still impervious to water and air infiltration. Dethatching can help with a very tight, thick lawn by thinning it out. One of the biggest benefits of aeration is the reduction of compaction especially on a slope. These holes trap and slow water down allowing it to soak in and not run off.

A cam driven aerifier is more efficient at plugging with great force. The plugs pulled should be allowed to dry and fall apart on the lawn. They add some soil and microbes to the surface to help break thatch down. The fluffy remainder will get picked up with the mower.

Established Lawns:

Aeration can be done anytime during the year; however, Moana Nursery recommends





*aerating or dethatching established lawns
from January through mid-April or from late
September through October.*

VII. SEASONAL COLOR AND VEGETABLES:

When properly executed seasonal color can add dramatic colors, interest, and sophistication to any landscape, patio, deck, entrance or courtyard. Likewise vegetable gardens can transform a space both visually and practically, now providing fresh produce that can be enjoyed.

Seasonal color and vegetables are short term plantings by design. The plants primarily utilized in seasonal color displays and vegetable gardens are typically discarded or added to the compost pile at the end of the season. Though perennials and ornamental grasses may be added to these groupings they should still be considered seasonal and not be thought of as long term plantings.

One of the many benefits of both seasonal color and vegetables is that they can thrive when planted in the ground, containers, baskets and even specialty walls. This flexibility allows these plants to be grown in small spaces like courtyards, decks, entrances, and awnings without major investments (the only requirement is adequate light). These types of plants do have significantly different maintenance requirements than the other categories previously discussed and take a little more gardening effort to achieve maximum results.

Average Length of Establishment Period:

None. Seasonal color and vegetables will live for short periods of times, usually 3 to 6 months and need to be replanted as the

season changes (Spring, Summer, Fall, Winter)

A. WATERING SEASONAL COLOR & VEGETABLES:

These plants typically have shallow root zones and are planted in a more porous, better draining soil. Because of this combination the watering requirements are different from other types of plants.

Annuals and vegetables are dependent upon regular watering and need to be checked daily. In our High Desert environment, especially during summer months, annuals and vegetables will most likely need to be watered daily and potentially multiple times per day to keep their shallow roots from meeting their Permanent Wilting Point. **A good rule of thumb is, if the soil is dry 2-3" below the surface, it needs watering.**

Overwatering can also be detrimental to a plant's health. Most annuals and vegetables do not like "*wet feet*" so be careful not to water them to the point that the soil is constantly wet. **If the surface soil is swampy, moldy or if there is standing water, the plants needs less water.** Identifying struggling plants, especially fragile annuals and vegetables, is pretty easy. A simple visual inspection conducted regularly will alert you to any problems. Wilting plants and dry soil are signs of not enough water, while wet soil well after watering occurs is an indicator that there is too much.

Seasonal color and vegetables can be watered by hand or via drip irrigation. If a drip irrigation system is set up properly the workload will be reduced significantly, but





the inspection of the soil moisture still needs to take place.

If drip irrigation is used, Moana Nursery recommends using a separate drip zone (drip valve) for seasonal color and vegetable rather than tapping into your existing drip system. Unlike conventional deep root drip irrigation we want to evenly water the top few inches of a container or bed so that the plants' shallow roots can absorb the moisture. This requires a faster application of water and shorter watering times conducted more frequently.

While drip emitters can work, we recommend utilizing micro-sprays. Micro-sprays apply water to a broader area at a quicker rate while still using the low-pressure principles of drip irrigation. If the same drip zone used for trees and shrubs is used for annuals or vegetables with micro-sprays, overwatering will occur if the watering principles/schedules discussed earlier in this guide are utilized. **Moana Nursery does not recommend utilizing micro-sprays and drip emitters on the same zone/valve.** Micro-sprays typically apply water at a rate of 6 to 27 gallons per hour while a typical drip emitter will apply water at a rate of 0.5 to 4 gallons per hour. The combination of drip emitters and micro-sprays will inevitably leave some plants in the zone overwatered while others are under watered.

Daytime Temperatures Less Than 75 Degrees:

- **Hand Watering:** 3 – 6 times per week, checking moisture 2-3" below the surface.
- **Micro-Spray Drip:** 3-6 times per week, 1 time per day, 5-10 minutes at a time. Check moisture 2-3" below surface.
- **Drip Irrigation:** 3-6 times per week, 1 time per day, 20-40 minutes at a time. Check moisture 2-3" below surface. Verify

even water coverage on all sides of plants. Not the preferred method.

Daytime Temperatures Greater Than 75 Degrees:

- **Hand Watering:** 5 – 7 times per week, checking moisture 2-3" below the surface.
- **Micro-Spray Drip:** 5-7 times per week, 1-3 times per day, 5-10 minutes at a time. Check moisture 2-3" below surface.
- **Drip Irrigation:** 5-7 times per week, 1-2 times per day, 30-45 minutes at a time. Check moisture 2-3" below surface. Verify even water coverage on all sides of plants. Not the preferred method.

B. FERTILIZING & GROOMING SEASONAL COLOR & VEGETABLES:

Seasonal Color arrangements typically feature flowering plants for most of their life. In order to maintain the vibrant and healthy look (maximum color) of an annual or perennial, proper fertilizing and grooming must take place on a regular basis. The same principle applies to vegetables but instead of color, produce is the desired result.

Fertilizing:

Seasonal color and vegetable producing plants need additional nutrients to achieve optimal growth and bloom. Moana Nursery recommends using a liquid fertilizer every one to two weeks. This fertilizer will provide a powerful injection of nutrients that keep these heavy feeders in bloom and/or producing produce throughout the plants' lifecycle.



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Seasonal Color:

Fertilize containers and annual beds with **G&B Organics High Bloome (Liquid) Fertilizer** every week.

Vegetables:

Fertilize vegetables with **G&B Organics High Growth (Liquid) Fertilizer** during the growth stage and with **G&B Organics High Bloome (Liquid) Fertilizer** during the flowering and fruit stage.

Grooming:

Grooming your containers, annual beds and vegetable gardens will keep them looking fresh and healthy. Grooming is the process of removing spent blooms (deadheading), excess produce, trimming back any aggressive plants or removing any plants that are not doing well.

Seasonal Color:

Moana Nursery recommends weekly grooming for containers and annual beds. Use a sharp compact shear to cut off spent blooms or trim aggressive plants, cut cleanly at 45 degree angle just above the next leaf for best results. Remove any undesirable plants (weeds) from the containers or beds as well as any expired (dead) dead annuals using a sharp pointed hand shovel or your hands.

Vegetables:

Moana Nursery recommends grooming and/or harvesting vegetables every other day at a minimum. Constant vigilance and attention are the keys to vegetable success. Use a sharp compact shear to harvest produce and trim plants as necessary, cut cleanly at 45 degree angle just above the next leaf for best results. Remove any undesirable plants (weeds) from the containers or beds as well as any expired (dead) dead vegetables or fruit using a sharp pointed hand shovel or your hands.

C. PEST & DISEASE CONTROL FOR SEASONAL COLOR AND VEGETABLES:

A beautiful container, planting bed or vegetable garden can be quickly ruined by unwanted pests or an untimely disease. Quick action can be the difference between a ruined display and full color all season.

Seasonal Color:

Moana Nursery recommends **Organocide 3-in-1 Garden Spray** to be applied every two-three weeks to kill and control harmful insects, diseases, molds and fungi. Begin using **only** when insects or disease is detected.

Vegetables:

Moana Nursery recommends **Organocide 3-in-1 Garden Spray** to be applied per label to kill and control harmful insects, diseases, molds and fungi. Begin using **only** when insects or disease is detected. **This product is safe on edible crops up to the day of harvest and will not harm bees or butterflies.**

D. CONTAINER MAINTENANCE AND ISSUES

Containers can be constructed from many different types of materials. Whether you have existing containers or are purchasing new ones, the materials used are an important consideration regarding the maintenance activities. Some of the factors that may play a role in their selection and use include budget, garden style, color preference, placement, weight and whether it needs to be frost proof. In many ways containers are like plants and need to be placed in the proper location. This section addresses some of the common maintenance issues associated with containers.





Drainage & Staining:

Containers need to have adequate drainage for the health and vigor of the seasonal color or vegetables. If containers are placed on a concrete patio, deck or other non-porous surface, there may be discoloration or staining to that surface following regular watering. The discoloration or staining is a direct result of the water passing through the soil and absorbing the micronutrients that are desirable for plant growth and health but add color to the water. This staining will not affect the structural integrity of the surface but may become unsightly and undesirable. If the excess water is addressed and cleaned in a timely manner it may not present a problem; however if allowed to pool on the surface, the stain will become more difficult to remove.

Cleaning the stain may be as simple as using garden hose to wash away the pooling water or using a brush or broom with a garden hose to clean the area. Pressure washing and cleaning products may be necessary if stain is established.

Moana Nursery recommends pot feet & saucers, when feasible, to collect drainage and prevent staining. Make sure the pot does not sit in water and that saucers are emptied prior to over flowing. The saucer serves little purpose if it cannot be emptied easily or if it overflows regularly.

Efflorescence:

Efflorescence is a chalky white salt residue that can occur with any product containing cement or concrete (also common in concrete pavers). As moisture migrates up to the surface of the concrete, it carries along with it calcium salts from within the cement or concrete. When the salts reach the surface, they react with CO₂ in the air and form insoluble calcium carbonate. This white,

dusty, scaly salt can be minimal or dramatic, depending on the amount of free calcium salt present in the concrete. Exposure to rain, standing water, and sprinklers only make the situation worse as water triggers the reaction and creates more efflorescence.

Efflorescence will eventually go away on its own as the free calcium is depleted; however, this can take a long time. To speed up the process clean the concrete with an efflorescence remover. Moana Nursery recommends **Alliance Gator Clean Efflorescence Cleaner**. Because each type of container is different, we recommend applying a very small amount of this cleaner to the container to ensure there are not negative effects.

Winterization/Cold Temperatures:

Terracotta, Concrete, certain glazed pottery and most thin walled container products are not frost proof and therefore should be emptied and stored inside (garage or shed) during the winter months. If soil is left in the pottery the moisture in the soil may enter into the microscopic holes in the pottery surface. This water will expand and contract as it freezes and thaws ultimately cracking the containers. These pots **need** to be emptied or stored inside during winter months.

Frost proof Black Clay pots, certain Synthetic or plastic pots, certain thick walled glazed pottery and metal pots are frost proof and can handle the expansion and contraction throughout the winter months, without cracking. These pots **do not need** to be emptied or stored inside during winter months.

VIII. IRRIGATION SYSTEM:

Irrigation systems provide convenient, efficient watering of your landscape. Your watering system is the single most important element in the maintenance of your investment. In our arid climate, it is critical to monitor the amount of water that is being used by your landscape, not only for the health of your investment, but also to conserve this precious natural resource. Periodic inspections should be completed to make adjustments for too little or too much water in the landscape.

A. COMPONENTS:

The four basic components of any irrigation system are the backflow prevention device, the controller or clock, the valves, and the distribution device. The controller tells the valves when to run, the valves open allowing water to get to the distribution device, and the distribution device applies the water to the landscape. Solutions will be outlined to deal with common problems.

Backflow Prevention Device:

The backflow prevention device protects drinking water from contamination and/or pollution. It is required by law and its only purpose is public safety. Most irrigation systems either have a pressure vacuum breaker (PVB) or a reduced pressure assembly (RPA). Both types of devices sit approximately 24" above the ground. Backflow prevention devices are more susceptible to freeze damage during winter months, so they must be drained when the system is off. Insulation bags can extend the irrigation season but will not protect the device in freezing temperatures.

Irrigation Controller:

The controller is the brains of the irrigation system; it tells your valves when to turn on and how long to stay on. Programming is a matter of selecting the days your irrigation system will run, the number of times it will run per each day, and the length of time each hydrozone will run. Most controllers have multiple programs that allow for category classification of irrigation programs. All lawn hydrozones are normally grouped in one program and drip hydrozones in another. Other potential groupings could be annual beds, containers (pots) or vegetable gardens.

Irrigation Valves:

The valves are located in a valve box which typically has a green lid, level with the ground. The valves open electrically when signaled by the controller, releasing water into the hydrozone to irrigate. Valves can be operated manually, if required, by turning the solenoid on top counterclockwise. There should be no water leakage from the valves or standing water in the valve box.

Distribution Devices:

The two basic irrigation distribution devices that are commonly utilized in our region are drip irrigation and overhead irrigation.

Drip irrigation has become the standard way of watering in northern Nevada and the Sierra due to the limited water resources. Drip irrigation is more efficient because it provides water at exactly the point where plants need it . . . the root zone. In addition, there is less water wasting because drip irrigation is not as susceptible to rapid evaporation or wind dispersion. Drip irrigation is applied via pressure compensated drip emitters that apply water in rates from ½ gallon per hour to 40 gallons per hour. Pressure compensated emitters



allow the irrigator to apply different amounts of water for each plant.

Overhead irrigation is commonly used for irrigating turf in our region. It applies water at a substantially faster rate than drip irrigation and distributes the water over a significantly larger area. There are three primary types of overhead irrigation heads (the mechanism that sprays the water): pop-up sprays, rotors, and impact heads. Each is effective at rapidly irrigating an area, but there is substantially less control than with drip irrigation. Improper use or management of overhead irrigation is the primary cause of water waste.

B. WINTERIZATION OF SYSTEM:

The freezing winter temperatures in our region will destroy an irrigation system if it is not properly shut down and drained. While this is not a difficult task it does take a little bit of time and is something that you will not do on a regular basis.

Winterizing an irrigation system should be done when night time temperatures dip below freezing. This normally occurs sometime between the 1st of November and the 15th of December.

In addition to the instructions listed below, www.moananursery.com has a step by step video that will walk you through the process. For additional peace of mind, Moana Nursery offers irrigation shutdowns for a nominal fee.

Follow these steps to winterize an irrigation system:

1. *Close the Supply Valve (turn clockwise completely)*

2. *Open the Test Cocks on the backflow device (turn ¼ turn either direction using a flat head screw driver, the slots should be horizontal on a PVB and vertical on an RPA)*
3. *Turn the Ball Valves on the backflow prevention device (turn 1/8th turn, so the handles are at 45 degree angle)*
4. *Open all of the Manual Drain Valves (turn counter-clockwise completely)*
5. *Turn the Irrigation Controller off*

C. SPRING ACTIVATION:

Similar to winterizing an irrigation system, activating an irrigation system should be done when night time temperatures are above freezing on a regular basis. This normally occurs between the 15th of March and the end of April. Irrigation systems that are activated early in the season may need to be re-winterized if the temperatures drop unseasonably.

Follow these steps to turn on an irrigation system:

1. *Close all of the Manual Drain Valves (turn clockwise completely)*
2. *Close the Test Cocks on the backflow device (turn ¼ turn either direction using a flat head screw driver, the slots should be vertical on a PVB or horizontal on an RPA)*
3. *Turn the Ball Valves on the backflow prevention device (turn 1/8th turn, so the handles are parallel with the pipe)*
4. *Open the Supply Valve (turn counter-clockwise completely)*
5. *Turn the Irrigation Controller on*
6. *Set the Irrigation Controller for cool weather watering*



7. *Run Test Cycle or manually run all irrigation zones to confirm system is operating properly*

D. BASIC MAINTENANCE:

In addition to activation and winterization of the irrigation system, these other regular maintenance activities need to be completed.

- Adjust irrigation schedule to adapt to changing weather and season.
- Clean drip irrigation filter (located at drip valve) every 3 months.
- Adjust overhead irrigation heads to ensure accurate spray zones.
- Check for leaks, broken heads and emitters. Repair as necessary or call for Moana Nursery's Irrigation Tech Service.

IX. HARDSCAPE:

While, patios & driveways are available in numerous colors, shapes, patterns and finishes, they usually consist of 2 primary types of material in our region: Concrete or Natural Stone. These materials are intrinsically very durable and will last for years; however, they are not maintenance free. Once constructed, regular maintenance should start immediately.

A. CONCRETE PAVERS:

Concrete pavers are manufactured uniformly which allows for easy replacement or flipping of individual pavers that have been stained or damaged.

Maintenance in general is relatively simple. Pavers should be swept clean on a regular basis and lightly power washed occasionally. In addition, weeds may grow in the joints and should be killed using a post emergent and pulled. If dirt build up is substantial a cleaning product can be applied for a more substantial cleaning. Moana Nursery recommends **Alliance Gator Clean Shampoo**.

In addition to these basic maintenance items, concrete pavers are subject to Efflorescence. Efflorescence is a chalky white salt residue that can occur with any product containing cement. As moisture migrates up to the surface of the concrete, it carries along with it calcium salts from within the concrete. When the salts reach the surface, they react with CO₂ in the air and form insoluble calcium carbonate. This white, dusty, scaly salt can be minimal or dramatic, depending on the amount of free calcium salt present in the concrete. Exposure to rain, standing water, and sprinklers only make the situation worse as water triggers the reaction and creates more efflorescence.

Efflorescence will eventually go away on its own as the free calcium is depleted; however, this can take a long time. To speed up the process clean the concrete with an efflorescence remover. Moana Nursery recommends **Alliance Gator Clean Efflorescence Cleaner**.

Due to the extreme environmental conditions of our region Moana Nursery recommends not applying a sealer to the concrete until after the first year. This will allow any efflorescence to rise to the surface so it can be easily cleaned. Sealing pavers immediately may trap the efflorescence in the pavers making it more difficult to remove.





After the first year a sealer can be applied if desired. The sealer will provide additional protection from oil, dirt, and de-icing salt. Moana Nursery recommends **Alliance Gator Seal**, which comes in three finishes: **Natural Look, Satin Look, and Wet Look**

B. NATURAL STONE:

Similar to concrete, natural stone should be swept clean on a regular basis and lightly power washed when necessary. The sand in the joints will need to be replaced over time. If dirt build up is substantial a cleaning product can be applied for a more substantial cleaning. Moana Nursery recommends **Alliance Gator Clean Shampoo**.

X. WATER FEATURES:

In addition to the soothing sounds of falling water, water features create a focal point for any landscape. Regular maintenance is instrumental to the operation of a water feature and its life expectancy. There are two primary types of water features: ponds & pondless.

A. PONDLESS:

A pondless water feature has a water retention basin filled with a permeable material such as rock and cobble or a pre-manufactured water matrix block (structural milk crates). The benefit of a pondless water feature is that the maintenance is easier than a typical pond due to the fact that the permeable infill in the water basin acts as a filter. In addition there is no inherent risk of

kids or pets drowning. Pondless water features cannot support fish life.

B. PONDS:

Water features whose water retention basins are open are classified as pond features. A pond feature may be deep or shallow, large or small. Pond features require an additional filter that helps keep the pond clean but more importantly protects the pump. This filter is usually installed next to the water feature pump.

C. BASIC MAINTENANCE:

All water features need to be cleaned on a regular basis. This cleaning is primarily the removal of organic matter (especially leaves, grasses and algae). Cleaning the water feature will allow the pump to operate more efficiently and will provide a better overall appearance. Winter and spring cleanings should be quite extensive, especially as the water feature is being put to bed for the season or being activated for the season. Keeping the water feature clean is the most important aspect of maintaining an operational water feature. Moana Nursery recommends **Pond Perfect** be applied to both pondless and pond water features every few weeks depending on the amount of algae and organic matter that enters the pond.

In addition to keeping a water feature clean the other important maintenance activity is keeping your water feature pump operational. Most water features are installed with submersible pumps, which are easy to operate and maintain. The pump should last a long time as long as it is not run in an empty basin. The water moving through



the pump keeps the motor cool; if the pump is run dry, the motor will heat up and damage the pump. Most water features Moana Nursery installs have a float valve connected to the irrigation system, to prevent the water in the basin from evaporating completely.

Submersible pumps are designed to be run continuously and should not be frequently turned on or off. Once or twice per day is ok, but turning it on like a light is not recommended.

Spring Clean Up:

Pond Feature

- *Pump water out of water feature*
- *Clean muck and organic debris out of basin*
- *Clean pump filter*
- *Verify pond auto fill is operational*
- *Refill pond*

Pondless Feature:

- *Pump water out of basin*
- *Clean muck and organic debris off of rocks*
- *Verify auto-fill is operational*
- *Rinse and refill pond*

Regular Maintenance (bi-weekly or monthly):

Pond:

- *Clean pump filter*
- *Remove leaves and other organic material*
- *Apply **Pond Perfect** on a regular basis*

Pondless:

- *Remove debris from basin*

Winter Clean-Up:

Pond:

- *Remove all organic material*
- *Clean pump filter*

Pondless:

- *Remove organic material from top of basin*

Moana Nursery's water feature team can complete these timely maintenance activities for you. Call us to set up a no hassle, water feature cleaning.

Winter Operations:

When the irrigation system is winterized the pond basin will not automatically be refilled via the float valve and the pump will most likely run dry if water is not manually filled into the basin. This can be particularly challenging with pondless basins where water level cannot be determined visually.

A water feature can be operated in the winter months as long as particular attention is paid to the amount of water in the basin.

If the water feature will not be utilized during the winter months removing and storing the pump indoors is an option. Pumps may be left in place during the winter months, but they may be exposed to a deep freeze that could damage the pumps. However, it is more likely that the pump will run dry than freeze. If a pump is removed; it should be stored in a 5 gallon bucket with water for the duration of the winter months. If stored dry, the O-rings in the pump will dry out, crack and cause future malfunctions. Keeping the pumps submerged throughout the winter months will protect the integrity of the internal O-rings and help ensure successful operation come spring.



XI. LOW VOLTAGE LANDSCAPE LIGHTING:

Low voltage landscape lighting offers a safe, efficient way to enjoy your landscape when the sun goes down. It transforms what you see in the garden during the day to a dramatic, romantic, even mysterious scene at night. Landscape lighting allows for outdoor living areas to be utilized after dark, provides safe passage along walkways, security and safety around the home as well as the opportunity for homeowners to see a return on their investment both day and night.

A. LIGHTING COMPONENTS:

A low voltage landscape lighting system consists of two primary components which are connected via buried 10 or 12 gauge wire.

Fixtures and Lamps (bulbs):

Similar to interior fixtures and bulbs, there are numerous types of exterior fixtures and lamps that achieve different results. The most common fixtures are well lights, spot lights, path lights, and wall light.

Transformer:

A transformer plugs into a 120 Volt outlet and reduces the power source to 12-Volts. This reduction in power reduces energy cost and consumption as well as risk of electrical shock.

B. BASIC MAINTENANCE:

A low-voltage lighting system requires regular maintenance like the rest of your landscape. The lighting fixtures will take abuse from regular gardening activities as well as the weather. Unlike your interior

fixtures your exterior lighting fixtures are lighting and highlighting growing objects which means they need to be occasionally repositioned or plants trimmed for the lighting to meet its objectives.

Simple maintenance activities for lighting should be accomplished 2 to 3 times per year.

- Ensure lights are not obstructed. Keep plant material pruned and debris off of fixtures (especially in ground fixtures).
- Clean lens on lights using a vinegar and water solution (1 part vinegar to 3 parts water).
- Replace light bulbs.
- If a timer is utilized adjust regularly to accommodate earlier or later sunsets.

XII. CREATING A WILD BIRD HABITAT:

A habitat is an area that provides wildlife and birds with four basic needs: food, water, shelter, and a place to raise young.

Food for Wildlife:

The ideal wildlife habitat supplies food through vegetation. This type of food sources meets the year-round needs of many species of birds and other wildlife. Shrubs, trees, and other plants that produce foods such as acorns, nuts, berries, and other seeds as well as buds, fruit, nectar and pollen should be planted as much as possible. Natural food sources can also be supplemented through supplying bird feeders.

Food through Feeders:

Adding several varieties of feeders to the landscape will attract the greatest variety of birds to your yard. Because birds have

different feeding requirements you will want to provide different feeders and foods.

Nectar feeders are popular with hummingbirds. Providing the sugar water in a hummingbird feeder supplements the nectar and insects that your hummingbird flowers provide.

Platform feeders, hopper feeders (wood feeders with a place to hold seed and a perching area) and tube feeders are popular ways to offer different kinds of seeds and seed blends. These feeders with the appropriate foods attract a variety of birds.

Specialty feeders are designed to attract specific birds. For example, finch feeders attract small-billed birds like goldfinches and chickadees. Finch and other specialty feeders allow small birds to reach the food while keeping larger birds from accessing the seed. Suet feeders are specialty feeders that can attract insect eating birds. There is also fruit suet to attract fruit eating birds. These feeders allow you to feed birds during times of years when their original food source may not be readily available.

Water:

Wildlife needs water, both for drinking and bathing. Water can be supplied in a birdbath, a small pool, a re-circulating waterfall, a shallow dish, or through a dripper or mister. A reliable source of water is important in a wildlife habitat area. An elevated birdbath will protect birds from cats and other predators and can be an attractive addition to the yard. A mister or dripper added to a birdbath will create an inviting sound to help attract birds and wildlife. A small pool set into the ground can provide not only water for drinking and bathing, but cover and reproductive areas for small fish, frogs, insects, and reptiles. A dependable, year

round water source is best. In summer heat, be sure to replace water regularly and to keep birdbaths clean.

Cover/Shelter:

Wildlife needs protective cover just as people need the shelter of a house. Cover can be provided in many forms. Plants that offer food can also provide cover. Dense shrubs, evergreens, hollow logs, rock piles, brush piles, and stonewalls provide cover for the many animal species.

Places to raise young:

A more specific kind of cover where birds and animals can reproduce is needed to make a backyard habitat complete. These areas provide space for courtship and for protecting young animals, whether they're birds in a nest, tadpoles in a shallow pool or specific plants upon which butterfly caterpillars depend.

Bird nest boxes and nesting shelves can be offered. Bat boxes will provide safe rearing areas when dense trees are not available. Dense plantings of shrubbery provide safe areas for many species of wildlife. Providing plants specifically for butterflies to use as hosts plants can ensure that the butterflies have a place to reproduce.

Backyard Habitats as Important Stop Over Points for Migratory Birds

Many birds migrate great distances in the spring to reach their summer homes. As birds leave their winter home to return to their breeding grounds, they need habitats as stop-over points before they reach their final destination. The stop-over habitats are necessary for birds to be able to rest, eat and gain their strength to continue their journey to find a place to raise their young.

As we create habitats in backyards, in schoolyards, at businesses and in our



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communities, we need to remember the importance of these habitats to the birds that make their long journeys north and then south again in the fall. In the early spring, many birds alter their diet and depend heavily upon insects. By providing nectar

producing native plants you are also providing places for insects that the birds will feast upon. Not only will the birds appreciate it, but the butterflies and bees will also benefit it.



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DIRECTORY OF SERVICES

Gardening Information: www.moananursery.com & www.moananursery.com/blog

Wild Birds Information: www.wbu.com/reno

Social Interaction: www.facebook.com/moananursery.com

Moana Nursery Landscape Services:

1190 West Moana Lane, Reno, NV, 89509 775-825-0602 ext. 134

- Residential & Commercial Landscape Design & Construction
- Residential & Commercial Exterior Landscape Maintenance
- Residential & Commercial Interior Landscape Maintenance
- Irrigation Repairs, Winterizations & Activations
- Water Feature Installation & Maintenance
- Easy Turf by FieldTurf (Artificial Grass)
- Hydro Seeding, Erosion Control & Revegetation
- Seasonal Color Installation & Maintenance
- Brite Lights – Holiday Lighting

Moana Lane Garden Center

1100 W. Moana Lane, Reno, NV, 89509 775-825-0600

- Plant Doctor, including At-Your-Site Consultation
- Delivery & Planting
- Planting, Gardening, & Outdoor Essentials
- Greenhouse (Interior Plants)
- The Florist at Moana..... 775-825-0671
- Wild Birds Unlimited Nature Shops

South Virginia Street Garden Center:

11301 South Virginia Street, Reno, NV 89511..... 775-853-1319

- Plant Doctor, including At-Your-Site Consultation
- Moana Rock, Bulk Rock, Soil, Mulch, Sand, etc.....775-853-1319 ext. 3
- Tree Land, Specimen Trees
- Planting, Gardening, & Outdoor Essentials
- Delivery & Planting
- Wild Birds Unlimited Nature Shops

Pyramid Highway Garden Center:

7655 Pyramid Highway, Sparks, NV 89436 775-425-4300

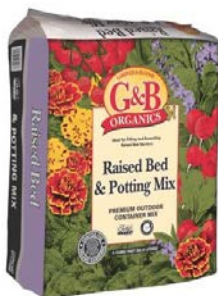
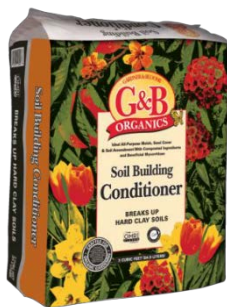
- Plant Doctor, including At-Your-Site Consultation
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- Wild Birds Unlimited Nature Shops



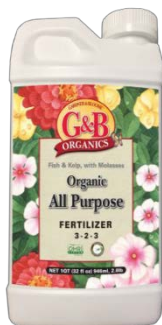
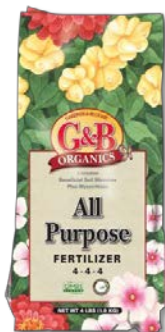


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Success in the garden starts with the soil!
Moana Nursery is proud to offer and use



Moana Nursery proudly recommends





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Notes:



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The Essential Maintenance Manual

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South Virginia Street Garden Center

Moana Rock, Outdoor Living & Tree

Land

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Landscape & Design Center

Design Build Construction

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Reno, NV 89509

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CA License # 317448