

SECTION B: WATER BUDGET CALCULATIONS

Section B.1 Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

$$\text{MAWA} = (\text{ETo}) (0.62) [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})]$$

where:

- MAWA = Maximum Applied Water Allowance (gallons per year)
- ETo = Reference Evapotranspiration (47.3 inches per year)
- 0.7 = ET Adjustment Factor (ETAF)
- LA = Landscaped Area, including Special Landscape Area (SLA) (in square feet)
- 0.62 = Conversion factor (to gallons per square foot)
- SLA = Portion of the landscape area identified as SLA (in square feet)
- 0.3 = Additional ETAF for SLA (1.0 – 0.7 = 0.3)

Maximum Applied Water Allowance = _____ gallons per year

Show calculations.

Section B.2 Estimated Total Water Use (ETWU)

The project's ETWU is calculated using the following formula:

$$ETWU = (ET_o)(0.62) \left(\frac{PF \times HA}{IE} + SLA \right)$$

where:

- ETWU = Estimated total water use per year (gallons per year)
- ET_o = Reference Evapotranspiration (inches per year)
- PF = Plant Factor from WUCOLS (defined in 17.33.030)
- HA = Hydrozone Area (high, medium, and low water use areas) (in square feet)
- SLA = Special Landscape Area (in square feet)
- 0.62 = Conversion Factor (to gallons per square foot)
- IE = Irrigation Efficiency (minimum 0.71)

Hydrozone Table for Calculating ETWU:

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
			Total	
	SLA			+
			Grand Total	

Estimate Total Water Use = _____ gallons

Show calculations.

SECTION C: CERTIFICATE OF COMPLETION

This certificate is filled out by the project applicant upon completion of the landscape project.

Section C.1 Project Information Sheet

Project Name and Applicant

Date	
Project Name	
Name of Project Applicant	Telephone No.
	Fax No.
Title	E-mail Address
Company	Street Address
City	State and Zip Code

Property Owner or Designee

Name	Telephone No.
	Fax No.
Title	E-mail Address
Company	Street Address
City	State and Zip Code

Site Identification

Street Address	APN
City	Latitude/Longitude (optional)
State and Zip Code	

Property Owner Certification:

“I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule.”

Signature(s)

Date

Please answer the questions below:

1. Date the Landscape Documentation Package was submitted to the Department. _____
2. Date the Landscape Documentation Package was approved by the Department. _____
3. Date that a copy of the Water Efficient Landscape Worksheet (including Water Budget Calculation) was submitted to the local water district, if applicable. _____

Section C.2 Certification of Installation According to the Landscape Documentation Package

“I/we certify that based upon periodic site observations, the work has been completed in accordance with Chapter 17.33 (Landscape Standards) and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package.”

Signature*	Date
Name (Print)	Telephone No.
	Fax No.
Title	E-mail Address
License or Certification No.	
Company	Street Address
City	State and Zip Code
* Signer of the landscape design plan, irrigation plan, or a licensed landscape contractor.	

Section C.3 Irrigation Scheduling

Attach parameters for setting the irrigation schedule on controller in compliance with Subparagraph 17.33.100.B.4.e (Landscaping Standards: Irrigation Scheduling).

Section C.4 Schedule of Landscape and Irrigation Maintenance

Attach schedule of Landscape and Irrigation Maintenance in compliance with Subparagraph 17.33.100.B.4.f (Landscaping Standards: Landscape and Irrigation Maintenance Schedule).

Section C.5 Landscape Irrigation Audit Report or Survey

Attach Landscape Irrigation Audit Report or Survey in compliance with Subparagraph 17.33.100.B.4.g (Landscaping Standards: Irrigation Audit Report or Survey).

Section C.6 Soil Management Report

Attach documentation verifying implementation of recommendations from the soil analysis report in compliance with Paragraph 17.33.100.B.6 (Landscaping Standards: Soil Management Report).

2. DROUGHT RESISTANT PLANT LIST

For Planting Up To The 3,400-foot elevation

Indigenous means the naturally growing plants of El Dorado County.

Adaptive means plants that are not indigenous, but that possess genetic traits that enable them to survive in El Dorado County with minimal or no water supplement. These plants have been proven to grow here.

Upper Elevations: “Upper Elevations” as used in this list means the areas between 1,800 and 3,400 feet, which generally encompass the areas east of Garden Valley, Kelsey, Greenwood and Placerville up to Quintette, and Pollock Pines. Trees and shrubs marked (**Upper Elevations**) will get stressed in most situations when you plant them in the lower elevations. Should you want to try them anyway, plant them in fill dirt areas, on the north side of buildings or north facing slopes, or in areas partially protected by the shade of mature trees. When you find such trees and shrubs growing in the lower elevations, look closely at their orientation and microclimate as far as slope, soil, and water conditions, and surrounding plant canopy and then compare it to your conditions before you decide to take the risk.

“See species list”: As there are too many species to include on our list, “See species list” refers to our recommended resource books, such as *Sunset Western Garden Book*, *Hortus*, Jepson *Manual of Flowering Plants*, or similar sources that can be used to research specific genus, species, and varieties for drought and high elevation sun tolerance.

Sunset Western Garden Book ‘Zone 7’ should only be used as a reference for cold tolerance. Many experienced gardeners in El Dorado County have lost their landscape investment by mistakenly planting only to *Sunset’s* Zone 7 guidelines. In El Dorado County, two neighbors side by side can have different soil types and depths, levels of soil compaction, areas of fill dirt, and orientation to the sun. A day of full sun here at our elevations can be destructive to a non-indigenous plant. The following list comes from firsthand experience and observations of successful plant growth. Your results may vary because of poor plant quality due to either genetic inferiority or because you bought a plant with compacted and/or circling, girdling roots that had outgrown its pot. When a plant with root problems matures, it will choke to death or fall over if you plant it without spreading out the roots in a fan shape. Other times the failure could be from variations in soil depth on your property, lack of mulch, the wrong north/south orientation, excessive radiant heat from bare dirt, black top, or concrete, or your planting technique.

Why Are Some Plants Not Listed? The intent of this list is to prepare for an inevitable drought. The genetically embedded characteristics of plants that have evolved in other dissimilar environments will not change or re-adapt when planted here. Most trees native to other latitudes suffer as they mature and show signs of stress and failure when planted elsewhere. You will only see a very few exceptions on the list below. Eastern and northern American oaks and maples, birches, ornamental pears, and most fruit trees get sunscald on their trunks from “our” sun here. Maples and mulberries are notorious for failures of root and branch structures as they mature. Locusts send up “volunteer” shoots from their roots. All sycamores are natives of riparian areas and suffer from lack of water and radiant heat from adjacent pavement. They are also susceptible to infestations of a fungus disease called anthracnose and their huge leaves can clog drains. Eucalyptus and Chinese tallow trees suffer dieback from frost. Tupelos cannot take our sun.

Alleppo pines suffer from the heat stress and get branch tip dieback and turpentine beetles as they mature. Coast Redwoods are indigenous to an ocean environment and have adapted to existing entirely on moisture from fog in the summer. They will require large amounts of water and protection from radiant heat and hot wind when they mature.

Indigenous Propagation Techniques. Ideally, planting trees and shrubs indigenous to your area will ensure their drought tolerance and viability. Planting seeds or native trees grown from seeds that have been collected within a 500 foot change in elevation from where your property is located will ensure the best chance of survival. When outside of the 500 foot elevation change, even trees of the same species may have different characteristics as the same species within this parameter. This is the same principal the Forest Service uses when distributing their trees for reforestation.

Some Things You Can Do To Improve Your Chances of Success:

1. Stockpile topsoil. Whenever you grade, stockpile your topsoil. Our topsoil is, on average, around 18 inches deep and contains beneficial fungi essential in helping our plants take in water and minerals. Taproots in the foothills are a fallacy. Most roots that pick up all the nutrients are in the top 12 inches of the soil and grow out horizontally past the edge of the dripline or outer most branch tips. Look at road cutbanks, irrigation or foundation trenches, or the percolation test or soil mantle holes for your septic system to see what lies beneath.

2. Use the stockpiled soil to make raised beds. Raised beds conserve water. Make islands of raised beds to concentrate your water in clustered locations and in doing so you will have created fire breaks in between. Use the native rocks you uncovered while grading to hold the soil in.

3. Be careful choosing your plants. Do not be shy about pulling a plant out of its container and looking for circular/girdling roots. Shorter, stouter trees and shrubs with many lower branches will thrive better than tall ones that are lashed to a packing stick. **Five gallon trees will pass up fifteen gallon trees in the long run, both in size and viability.** Planting a fifteen gallon tree that has spent its life rootbound in a container has the same chance for success as getting a person to walk with one foot.

4. Remember that a container grown tree is not a natural condition. A tree needs to blow in the wind in order for it to get the signal to grow stronger. What would happen to your muscles in your arms if they were kept in a cast? They would weaken and atrophy. It is the same principal for a tree that has been taped tightly to a packing stick for purposes of transporting it to its final location. After planting, remove the tape and stick and replace them with two stakes positioned on opposite sides of the trunk outside the branch tips. Use something flexible like plastic tape or old nylons and wrap one piece each in opposite directions around the tree trunk and tie the loose ends to the stake. Tie them tight for about three weeks after planting. After that stretch them so their only purpose is to catch the tree in a storm. Remove them after one year. If the tree falls over it either has a girdling root wrapped around its crown, has been destroyed by a mole or gopher, or you bought a container grown specimen whose structure was so artificially enhanced with fertilizer it could no longer take the environmental pressure. If you were pumped full of steroids when you were developing you would look great for a while, too. Unfortunately, both scenarios go against how plants and people are genetically programmed to develop and cause results that would not normally happen under natural conditions.

5. Digging the planting hole. Using metal tools like shovels, backhoes, and mechanical augers will glaze the sides of planting holes and water will not percolate beyond the sides of the hole. You must correct this before you plant or the formerly happy plant or tree will get stuck spinning around in the bowl you've created and topple over or will rot at the root crown. Always use a pick or the point of the shovel to break up and roughen the sides of the hole before planting.

6. Mulching. Mulching adds organic matter and nutrients to the soil. Landscape cloth of any kind is not recommended because it prevents this from happening and makes for an artificial, chemical fertilizer-dependant situation. Try to imitate the forest. Any plant you choose that is not a manmade cultivar is indigenous somewhere and in their natural environment they do not live in a hole surrounded by bare dirt. Tree service chipper mulch used as top dressing gives the best and longest lasting protection from radiant heat, keeps the soil at even temperatures, and brings in the earwigs, fungi, and worms that regenerate and aerate the soil for you. Remember that in our county the roots of plants in most situations live in the top 12-18" of soil. The roots at the dripline (tips of the outermost branches) are the ones picking up the water and nutrients. This means as the plant matures you will have to increase the mulched area outward to keep up with that growth.

7. Watering. Watering at the trunk will cause the base of the tree to rot. Roots at the dripline are the ones picking up water, so you will need to keep moving the watering points of your drip irrigation outward as the tree matures. In most cases dripline watering becomes impossible because of site constraints and therein lies the reason to choose drought resistant plants at the start.

(If you would like to see photos of any of these trees or plants just use a search engine such as Google.com or similar and select the “Images” section. Enter either the common or botanical name to bring up photos.)

TREES

Adaptive Conifers (needle-leafed evergreens)

<i>Cedrus atlantica glauca</i>	blue Atlas cedar
<i>Cedrus atlantica</i>	green Atlas cedar
<i>Cedrus deodora</i>	deodar cedar (top choice of non-indigenous conifers)
<i>Cedrus libani</i>	cedar of Lebanon
<i>Cupressus arizonica</i>	Arizona cypress
<i>Pinus mugo mugo</i>	Mugo pine
<i>Juniperus deppeana</i>	alligator juniper
<i>Juniperus monosperma</i>	cherrystone juniper
<i>Juniperus osteosperma</i>	Utah Juniper
<i>Juniperus scopulorum</i>	Rocky Mountain juniper
<i>Juniperus virginiana</i>	eastern red cedar
<i>Sequoiadendron giganteum</i>	giant Sequoia
<i>Torreya californica</i>	California nutmeg

Indigenous Conifers (needle-leafed evergreens)

<i>Calocedrus (Libocedrus) decurrens</i>	incense cedar (upper elevations)
<i>Pseudotsuga menziesii</i>	Douglas fir (upper elevations)
<i>Pinus ponderosa</i>	ponderosa pine
<i>Pinus sabiniana gray</i>	foothill pine
<i>Juniperus occidentalis</i>	western juniper
<i>Taxus brevifolia</i>	Pacific yew (upper elevations)
<i>Tsuga mertensiana</i>	mountain hemlock (upper elevations)

Adaptive Broadleafed Evergreens

(Trees that hold their leaves but are not needle bearing trees like pines, firs etc.)

<i>Arbutus unedo</i>	strawberry tree
<i>Quercus ilex</i>	holly oak
<i>Quercus suber</i>	cork oak

Indigenous Broadleafed Evergreen Trees

(Trees that hold their leaves but are not needle-bearing trees like pines, firs etc.)

<i>Arbutus menziesii</i>	Pacific madrone (upper elevations)
<i>Lithocarpus densiflorus</i>	tanbark oak (upper elevations)
<i>Quercus chrysolepis</i>	canyon live oak (upper elevations)
<i>Quercus durata</i>	leather oak
<i>Quercus wislizenii</i>	interior live oak
<i>Umbellularia californica</i>	California bay laurel

Adaptive Broadleafed Deciduous Trees

(Trees that shed their leaves in winter)

<i>Acer platanoides</i>	Norway maple, 'Crimson King'
<i>Ficus carica</i>	fig
<i>Koelreuteria paniculata</i>	goldenrain tree
<i>Laburnum anagyroides</i>	goldenchain tree
<i>Lagerstroemia indica</i>	crape myrtle
<i>Melia azedarach</i>	chinaberry
<i>Olea euroapea</i>	olive
<i>Pistachia chinensis</i>	Chinese pistache (top choice of non-indigenous shade trees)
<i>Prunus cerasifera</i>	purple-leaf plum
<i>Pyrus communis</i>	pear

Indigenous Broadleafed Deciduous Trees

(Trees that shed their leaves in winter)

<i>Acer macrophyllum</i>	bigleaf maple (upper elevations)
<i>Acer negundo</i> 'californicum'	box elder
<i>Aesculus californica</i> (California buckeye
<i>Cornus nuttallii</i>	flowering dogwood
<i>Fraxinus latifolia</i>	Oregon ash
<i>Juglans hindsii</i>	California black walnut
<i>Quercus Douglasii</i>	blue oak
<i>Quercus kelloggii</i>	California black oak
<i>Quercus lobata</i>	valley oak/California white

SHRUBS

Adaptive Low (0'-3') Shrubs

<i>Arctostaphylos</i>	manzanita (See species list)
<i>Baccharis pillularis</i>	dwarf coyote bush
<i>Ceanothus</i>	(See species list)
<i>Correa</i>	Australian fuchsia
<i>Cistus crispus</i>	rockrose
<i>Cotoneaster dammeria</i>	'Coral Beauty', 'Lowfast' bearberry cotoneaster
<i>Cotoneaster horizontalis</i>	rock cotoneaster
<i>Cotoneaster microphyllus</i>	rockspray
<i>Grevillea</i>	(See species list)
<i>Juniperus chinensis</i>	'Armstrong'
<i>Juniperus chinensis</i>	'Mint Julep'
<i>Lavendula</i>	lavender
<i>Rosmarinus officinalis</i>	rosemary (See species list)
<i>Santolina</i>	(See species list)

Indigenous Low (0'-3') Shrubs

<i>Arctostaphylos nevadensis x viscida</i>	pine-mat manzanita
<i>Mahonia repens</i>	creeping mahonia
<i>Rubus parviflorus</i>	thimbleberry
<i>Symphoricarpus rivularis</i>	creeping snowberry

Adaptive Medium (3'-6') Shrubs

<i>Calycanthus occidentalis</i>	spice brush
<i>Carpenteria californica</i>	bush anemone
<i>Ceanothus</i>	(See species list)
<i>Cistus rockrose</i>	(See species list)
<i>Convolvulus cneorum</i>	bush morning glory
<i>Cotoneaster</i>	(See species list)
<i>Fallugia paradoxa</i>	Apache plume
<i>Grevillea</i>	(See species list)
<i>Nandina domestica</i>	heavenly bamboo
<i>Lupinus albifrons</i>	silver lupine
<i>Mahonia aquifolia</i>	Oregon grape
<i>Mahonia eomariifolia</i>	Venetian blind mahonia
<i>Phlomis fruticosa</i>	Jerusalem sage or P. sania
<i>Potentilla fruticosa</i>	potentilla
<i>Rhus ovata</i>	sugar bush
<i>Ribes sanguineum</i>	gooseberry
<i>Rosmarinus officinalis</i>	rosemary (See species list).
<i>Salvia</i>	sage (See species list)
<i>Spiraea prunifolia</i>	shoe button bridal wreath
<i>Spiraea densiflora</i>	mountain spiraea
<i>Spiraea douglasii</i>	western spiraea
<i>Styrax officinalis</i> 'californicus'	snowdrop bush

Indigenous Medium (3'-6') Shrubs

<i>Ceanothus cordulatus</i>	snow bush
<i>Ceanothus lemmonii</i>	Lemmon's ceanothus
<i>Ceanothus velutinus</i>	snowbrush
<i>Cercocarpus betuloides</i>	birch-leaf mountain mahogany
<i>Cercocarpus ledifolius</i>	curl-leaf mountain mahogany
<i>Chrysolepis sempervirens</i>	chinquapin
<i>Chrysothamnus nauseosus</i>	rabbit brush
<i>Holodiscus discolor</i>	cream bush
<i>Mahonia nervosa</i>	longleaf mahonia
<i>Mahonia pinnata</i>	holly leaf mahonia
<i>Mimulus aurantiacus</i>	orange bush monkey flower
<i>Lonicera hispidula</i>	pink wild honeysuckle
<i>Lupinus albifrons</i>	silver bush lupine
<i>Pickeringia montana</i>	chaparral pea
<i>Purshia tridentate</i>	bitter brush
<i>Rhamnus crocea ilicifolia</i>	holly-leaf redberry
<i>Rhamnus rubra</i>	red coffeeberry
<i>Rhus trilobata</i>	three-leafed sumac
<i>Ribes cereum</i>	wax currant
<i>Ribes malvaceum</i>	chaparral flowering currant
<i>Ribes roezlii</i>	Sierra gooseberry

Adaptive Tall (over 6ft) Shrubs

<i>Arctostaphylos</i>	(See species list)
<i>Arbutus unundo</i>	strawberry tree
<i>Ceanothus</i>	(See species list)
<i>Chaenomeles</i>	flowering quince
<i>Cotinus coggygria</i>	smoke tree, 'Velvet Cloak', 'Royal Purple' (See species list)
<i>Elaeagnus x ebbingei</i>	silverberry 'Guilt Edge'
<i>Fremontodendron californicum</i>	flannel bush
<i>Garrya fremontii</i>	Fremont's silk-tassel
<i>Photinia serratifolia</i>	Chinese photinia
<i>Rhamnus californica</i>	'Eve Case' coffeeberry
<i>Syringa vulgaris</i>	lilac
<i>Viburnum tinus</i>	robustum

Indigenous Tall (over 6ft) Shrubs

<i>Arctostaphylos patula</i>	green-leaf manzanita
<i>Arctostaphylos viscida</i>	white-leaf manzanita
<i>Baccharis pilularis consanguineum</i>	coyote brush
<i>Ceanothus cuneatus</i>	buckbrush
<i>Cercis occidentalis</i>	western redbud
<i>Eriodictyon californicum</i>	yerba santa
<i>Fremontodendron decumbens</i>	Pine Hill flannel bush
<i>Heteromeles arbutifolia</i>	toyon
<i>Philadelphus lewisii</i>	mock orange
<i>Physocarpus capitatus</i>	western ninebark
<i>Rhamnus californica tomentella</i>	coffeeberry

Adaptive Perennials

<i>Aethionema x warleyense</i>	stonecress
<i>Achillea</i>	yarrow (See species list)
<i>Alyssum montanum</i>	'Basket of Gold'
<i>Artemisia</i>	(See species list)
<i>Callirhoe involucrate</i>	poppy mallow
<i>Centranthus ruber</i>	Jupiter's beard
<i>Eriogonum</i>	wild buckwheat (See species list)
<i>Euphorbia</i>	spurge (See species list)
<i>Gaura lindheimeri</i>	
<i>Helianthemum nummularium</i>	sunrose
<i>Iris</i>	Pacific coast iris
<i>Lavendula</i>	lavender (See species list)
<i>Marrubium rotundifolium</i>	silver edged horehound
<i>Nepeta</i>	catmint
<i>Origanum</i>	ornamental oregano (See species list)
<i>Perovskia</i>	Russian sage
<i>Phlomis</i>	(See species list)
<i>Potentilla</i>	cinquefoil (See species list)
<i>Salvia</i>	sage (See species list)
<i>Stachys</i>	(See species list)
<i>Tanacetum densum amanii</i>	partridge feather
<i>Thymus</i>	thyme (See species list)
<i>Veronia prostrate</i>	Speedwell

Indigenous Perennials

<i>Achillea millefolium</i>	yarrow
<i>Agastache urticifolia</i>	nettle-leaf
<i>Lupinus albicaulis</i>	lupine
<i>Lupinus caudatus</i>	silvery lupine
<i>Monardella odoratissima</i>	coyote mint
<i>Monardella villosa</i>	coyote mint
<i>Penstemon heterophyllus</i>	foothill penstemon
<i>Potenilla glandulosa</i>	sticky cinquefoil

Adaptive Vines

<i>Lonicera standishii</i>	winter daphne bush honeysuckle
<i>Rosa banksiae</i>	Lady Banks' rose (aggressive growth)

Indigenous Vines

<i>Aristolochia californica</i>	California pipe vine or Dutchman's pipe vine
<i>Clematis lasiantha</i>	chaparral virgin's bower
<i>Lonicera hispidula</i>	pink wild honeysuckle
<i>Lonicera interrupta</i>	chaparral honeysuckle
<i>Vitis californica</i>	California wild grape

Adaptive Ground Covers

<i>Achillea tomentosa</i>	wooly yarrow
<i>Arctostaphylos uva-ursi</i>	Kinnick Kinnick and bearberry.
<i>Armeria martima</i>	common thrift; 'Sea Pink'
<i>Baccharis pilularis</i>	'Twin Peaks II' dwarf coyote brush
<i>Ceanothus griseus horizontalis</i>	'Yankee Point'
<i>Ceanothus griseus horizontalis</i>	'Carmel Creeper'
<i>Cotoneaster dammeri</i>	bearberry cotoneaster
<i>Cotoneaster horizontalis</i>	rock cotoneaster
<i>Festuca ovina</i>	'Glauca' blue fescue
<i>Juniperus</i>	(See species list).
<i>Mahonia pepens</i>	creeping mahonia
<i>Rosmarinus officinalis 'Prostratus'</i>	dwarf rosemary
<i>Santolina chamaecyparissus</i>	lavender cotton
<i>Sedum</i>	(See species list).
<i>Thymus</i>	thyme (See species list).

Adaptive Ornamental Grasses

<i>Festuca</i>	fescue (See species list)
<i>Helictotrichon sempervirens</i>	blue oat grass
<i>Miscanthus sinensis</i>	(See species list)
<i>Stipa tenacissima</i>	feather grass

Indigenous Ornamental Grasses

<i>Festuca californica</i>	California fescue
<i>Festuca idahoensis</i>	Idaho fescue
<i>Muhlenbergia rigens</i>	deer grass
<i>Sisyrinchium bellum</i>	blue-eyed grass
<i>Sisyrinchium californicum</i>	yellow-eyed grass
<i>Stipa comata</i>	needle-and-thread
<i>Stipa pulchra</i>	purple needlegrass

Succulants/Cacti

<i>Agave</i>	(See species list)
<i>Crassula</i>	(See species list)
<i>Dasyliirion wheeleri</i>	desert spoon
<i>Sedum</i>	(See species list)
<i>Yucca</i>	(See species list)

3. PARKING LOT SHADE TREE AND CALCULATION LISTS

A. Introduction

The attached lists are recommended for use in designing shade tree coverage for parking lots in compliance with Chapter 17.33 of the Zoning Ordinance (Landscaping Standards). You may also refer to the *El Dorado County Drought Resistant Plant List* which is customized for planting success in the foothills of El Dorado County where there are particular microclimates and soil conditions.

General Plan Policy 7.3.5.1 requires commercial development to utilize drought tolerant plant species in landscaping, where feasible. Exotic or introduced plant species not indigenous to or consistent with the plant community in which proposed development is located is discouraged.

B. Exceptions to the lists.

The following shade tree lists may be expanded by a horticulturalist, landscape architect, or arborist certified by the International Society of Arboriculture (ISA) upon submittal of documentation on the appropriateness of the tree based on its adaptability to the El Dorado County climate, its drought tolerance, normal growth characteristics, and the estimated crown size after 15 years of maturity. The Director will consider this information and may add the tree(s) to the list if it satisfies local criteria.

C. Using the lists.

As used in the following lists, “Upper Elevations” means the elevation above 1,800 feet, which generally encompasses the areas east of Greenwood, Garden Valley, Kelsey, and Placerville. In most situations trees and shrubs so denoted will become stressed as they mature at lower elevations and their water needs will increase significantly. Should they be used at lower elevations, they do best when planted in fill-dirt areas and protected from hot wind and radiant heat. Their sensitivity to radiant heat should strongly discourage anyone from planting them in paved parking lots at the lower elevations.

The following shade tree lists are grouped according to their growth potential at 15 years maturity. Their shade estimates at maturity are shown in square feet based on their percent of tree canopy that will cover the parking lot. To figure the total shade area proposed in a landscape plan, see Section E, (Using Figure 1).

D. TREE LISTS. Based on shade potential at tree maturity:

1. 30 to 35 Foot Diameter-Growth Trees:

- 100 percent (interior placement) = 962 square feet
- 50 percent (south, east, and west elevations) = 481 square feet
- 25 percent (north elevation and corner placement) = 240 square feet

BOTANICAL NAME	COMMON NAME
<i>Acer platanoides</i> ²	Norway maple
<i>Acer platanoides</i> ² ‘Crimson King’	purple-leafed Norway maple
<i>Acer macropyllum</i> ^{1,2} (upper elevations)	bigleaf maple
<i>Calocedrus decurrens</i> ¹ (upper elevations)	incense cedar
<i>Cedrus atlantica</i>	Atlas cedar
<i>Cedrus deodara</i> (top choice for non-native conifer)	deodar cedar
<i>Cupressus arizonica</i>	Arizona cypress
<i>Fraxinus latifolia</i> ¹	Oregon ash
<i>Melia azedarach</i>	chinaberry
<i>Pistacia chinensis</i> (top choice for non-native deciduous tree)	Chinese pistache
<i>Platanus acerifolia</i> ³	European sycamore/London plane tree
<i>Pseudotsuga menziesii</i> ¹ (upper elevations)	Douglas fir
<i>Quercus chrysolepis</i> ¹ (upper elevations)	canyon live oak
<i>Quercus douglasii</i> ¹	blue oak
<i>Quercus ilex</i>	holly oak
<i>Quercus kelloggii</i> ¹	California black oak
<i>Quercus lobata</i> ¹ (top choice for native deciduous tree)	California valley oak
<i>Quercus suber</i>	cork oak
<i>Quercus wislizenii</i> ¹	interior live oak
<i>Sequoiadendron giganteum</i> (upper elevations)	giant sequoia
<i>Umbellularia californica</i> ¹	California laurel

NOTES:

- ¹ Indigenous to and grows naturally in El Dorado County.
- ² Impacts to infrastructure and hardscape from this tree species should be considered when siting due to invasive root systems that may cause upheaval and cracking.
- ³ This species is not drought resistant in the El Dorado County environment and will require supplemental water throughout its lifespan

2. 25 to 30 Foot Diameter-Growth Trees:

100 percent (interior placement) = 707 square feet
 50 percent (south, east, and west elevations) = 354 square feet
 25 percent (north elevation and corner placement) = 240 square feet

<i>Acer macrophyllum</i> ^{1,2}	bigleaf maple
<i>Aesculus californica</i> ¹	California buckeye
<i>Fraxinus oxycarpa</i> "Raywood"	Raywood ash
<i>Liquidambar styraciflua</i> ²	American sweet gum (liquid amber)
<i>Olea euroapea</i>	olive (fruitless varieties available)

3. 20-25 Foot Diameter-Growth Trees:

100 percent (interior placement) = 491 square feet
 50 percent (south, east, and west elevations) = 246 square feet
 25 percent (north elevation and corner placement) = 123 square feet

<i>Aesculus californica</i> ¹	California buckeye
<i>Koelreuteria paniculata</i>	goldenrain tree

4. 15-20 Foot Diameter-Growth Trees:

100 percent (interior placement) = 314 square feet
 50 percent (south, east, and west elevations) = 157 square feet
 25 percent (north elevation and corner placement) = 79 square feet

<i>Arbutus unedo</i>	strawberry tree
<i>Cercis occidentalis</i> ¹	western redbud
<i>Cornus nuttalli</i> ¹	western flowering dogwood
<i>Ficus carica</i>	edible fig
<i>Laburnum anagyroides</i>	goldenchain tree
<i>Lagerstroemia indica</i>	crepe myrtle
<i>Prunus cerasifera</i> 'Krauter Vesuvius'	purple-leaf flowering plum
<i>Pyrus communis</i>	European pear

NOTES: ¹ Indigenous to and grows naturally in El Dorado County.

² Impacts to infrastructure and hardscape from this tree species should be considered when siting due to invasive root systems that may cause upheaval and cracking .

³ This species is not drought resistant in the El Dorado County environment and will require supplemental water throughout its lifespan

E. Using Figure 1. Figure 1, to follow, is intended to reflect the manner in which shade is credited under various conditions and is not an illustration of 50 percent shade coverage. In addition, it only reflects the shade potential produced by trees listed under the 30-35 foot diameter-growth potential. Better placement and/or more trees will be necessary to conform to shade requirements when trees with smaller diameter-growth potential are utilized in a parking lot landscape design.

1. If the site has two or more unconnected parking lots, shade shall be calculated separately for each lot. If multiple parking lots are connected by an adjoining drive, they shall be calculated as one lot.
2. Shade is determined by using the appropriate percentage of the tree's crown based on its planting location within the lot, as demonstrated in Figure 1. The percentage can then be translated into square feet according to the criteria under the applicable tree diameter-growth list. A determination of compliance with Section 17.33.050.C (Parking Lot Landscaping) can be made by the following process:
 - a. Calculate the total shade area required (in sq ft) by multiplying the square footage of the paved parking lot area(s) by 0.5;
 - b. Select trees from the approved Tree Lists for placement in the landscaping plan.
 - c. Mark each tree in the landscaping plan with the following ratings based on the percent of coverage that will be provided due to its planting location (shade overlap is not counted twice):
 - (1) F for 100 percent
 - (2) TQ for 75 percent
 - (3) H for 50 percent
 - (4) Q for 25 percent
3. Calculate the shade provided from each tree by translating the percentage rating into square feet using the appropriate diameter-growth tree list square footage criteria in Section D (Tree Lists).
4. Total the amount of square footage provided and compare it to the total square footage required under Paragraph 2.a above. The amount should be equal to or greater than the required amount of parking lot shade coverage.

APPENDIX B
EL DORADO COUNTY
Lighting Inventory

Section A Project Information:

Project Name & File No: _____

Site Address or Location: _____

APN: _____ **Building Permit #** _____

Section B.1 Lighting Allowance

As a reference source, please review the Outdoor Lighting Ordinance, Chapter 17.34.

$$\begin{aligned} & \text{_____ Maximum lumens (CR, RC, or RR)} \\ \times & \text{_____ Total project area (Acres or net acres)} \\ = & \text{_____ **Maximum Lumen Output Allowed**} \end{aligned}$$

Section B.2 Preliminary Lighting Use

(A) Lamp Type	(B) Watts per lamp	(C) Lighting Plan Key (ID#)	(D) Number of lamps/ Length in feet (Neon only)	(E) Initial Lumen Output	(D x E) Total Unit Lumen Output
				Total Lumen Output	

APPENDIX B

Design Certification:

This form must be completed and signed by the design professional, as defined under 17.34.020.

“I/we certify that the design and technical specifications are compliant with the requirements in Chapter 17.34 (Outdoor Lighting).”

Signature	Date
Name (Print)	Title
Telephone No.	E-mail Address
License or Certification No.	
Company	Street Address
City	State and Zip Code

Section C Construction and Installation Certificate of Completion

This form must be completed and signed by the design professional or the licensed contractor who installed the system.

“I/we certify that based upon periodic site observations, the work has been completed in accordance with Chapter 17.34 (Outdoor Lighting) and that the lighting system was built and installed according to the design specifications certified above.”

Signature	Date
Name (Print)	Title
Telephone No.	E-mail Address
License or Certification No.	
Company	Street Address
City	State and Zip Code

APPENDIX C

EL DORADO COUNTY DETERMINATION OF SUBSTANTIAL IMPROVEMENT CHECKLIST

This form is for use in determining whether or not a permit application qualifies for application of substantial improvements criteria. This form must be permanently retained on file for review.

DATE OF EVALUATION: _____

STRUCTURE ADDRESS: _____
P.O. Box/Street City State/Zip

OWNER'S NAME: _____

PERMIT APPLICANT: (enter "same" if owner) _____

MAILING ADDRESS: _____
P.O. Box/Street City State/Zip

TELEPHONE NUMBER: (_____) _____

FORM PREPARED BY: _____ DATE _____

APN: _____ FLOOD ZONE: _____

PERMIT TYPE: RESIDENTIAL
 NON-RESIDENTIAL

PERMIT # _____

FINAL DETERMINATION:
(see page three)

SUBSTANTIAL IMPROVEMENT:

DOES NOT QUALIFY
 YES
 NO

FOR STAFF USE ONLY
PLANNING DEPARTMENT
STAMP OF APPROVAL:

NATURE OF PERMIT / CONSTRUCTION:

(give details as to scope of work including square feet)

FOR WORK OTHER THAN PRIMARY STRUCTURE:

- A. GARAGE: ATTACHED
- DETACHED

B. IF TANK OR OTHER STRUCTURE, IDENTIFY TYPE: _____

AGE OF STRUCTURE: _____ YEARS

"Substantial improvement" means any repair, reconstruction, or improvement to a structure, the cost of which exceeds fifty percent of the market value of the structure either:

- a. Before the improvement or repair is started; or
 - b. If the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.
- This term does not, however, include either:
- a. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
 - b. Any alteration of a structure listed on the National Register of Historic Places or a state or local inventory of historic places.

IN ORDER TO DETERMINE 50% OF THE MARKET VALUE, COMPLETE THE FOLLOWING:

1. INITIAL CALCULATION FOR SUBSTANTIAL IMPROVEMENT

- A. **VALUE OF STRUCTURE PRIOR TO PERMIT ACTIVITY:** (based upon community established standards: appraisal, past permit records, assessor's value, etc.)

\$ _____

B. VALUE OF STRUCTURE AFTER PROPOSED WORK IS COMPLETED:
(based upon community established standards: appraisal, past permit records, assessor's value, etc.)

\$ _____

INITIAL CALCULATION: $(B / A) - 1.0 = V$

V = _____ PERCENTAGE OF MARKET VALUE INCREASE

2. **IF INITIAL CALCULATION IS LESS THAN 40%:** Mark "Does Not Qualify" on page one. No further information is required.
3. **IF IN THE 40% TO 60% RANGE:** Further detailed information is required to determine the value of the structure. Attach appraisal information from certified appraiser computing market value and percentage of substantial improvement.

BASED UPON THE ATTACHED DETAILED CALCULATIONS, THE PERCENTAGE FIGURE FOR THIS PERMIT IMPROVEMENT IS:

_____ PERCENT OF MARKET VALUE

4. **IF 50% OR GREATER:** The structure is considered to be a substantial improvement and requires compliance with current community NFIP ordinance requirements. Mark "YES" on page one.
5. **IF LESS THAN 50%:** Mark "NO" on page one.

FINAL DETERMINATION IS SUBJECT TO REVIEW AND APPROVAL BY THE COUNTY PLANNING DEPARTMENT.

NOTES:

- * Compute using square footage times the building valuation data in Building Standards Determined by ICC.
- * Do not include the non-structure improvements or values such as property value or fences, pools, landscaping, etc.
- * Detached garages or outbuildings are not included, but are treated as separate structures.
- * Labor done by owner must be computed based upon normal labor and materials values.

APPENDIX D

Examples: Density Bonus Calculations

EXAMPLE 1:

Total Project Site = 80 acres with: **3 acre lake**
 1 acre perennial stream
 4 acres of 30% slopes

Development Plan with Existing RE-5 Zone:

1. 80 acres – 4 acres of water bodies (3 acre lake + 1 acre perennial stream) =

76 acres for base density calculations at:

$$\frac{76 \text{ acres}}{5 \text{ (RE-5)}} = 15 \text{ du's base density}$$

2. 80 acres Total Project Site x 30% = **24 acres open space requirement**

3. 24 acres
 – 8 acres Non-developable (4 acres 30% slopes + 3 acre lake + 1 acre perennial stream)
 = **16 acres for density bonus calculation**

4. $\frac{16 \text{ acres}}{5 \text{ (RE-5)}} = 3 \text{ du's}$

5. 3 du's x 1.5 = **4 du's Density Bonus**

6. 15 (base density)
 + 4 (density bonus)
 = **19 du's Total Project Density**

APPENDIX E

1. OFF SITE CONSERVATION EASEMENT OR IN LIEU FEE WORKSHEETS

SECTION A. OAK WOODLAND

Use the following formulas to calculate additional fees or off site conservation easement dedication in lieu of the on site 30 percent open space project requirement:

$$\mathbf{A \times B \times 4 = C}$$

where:

A = 30 percent open space project requirement or portion thereof (in acres)

B = Base in lieu mitigation fee under Oak Woodland Management Plan (currently \$4,700/acre)

4 = Off site mitigation factor

C = In lieu fee required

and/or;

$$\mathbf{A \times 4 = C}$$

where:

A = 30 percent open space project requirement or portion thereof (in acres)

4 = Off site mitigation factor

C = In lieu conservation easement dedication required

SECTION B. INTEGRATED NATURAL RESOURCE MITIGATION PLAN (INRMP)

(Mitigation formula to be determined following Board adoption of the INRMP)

2. QUIMBY FEE WORKSHEET

Use the following formula to calculate additional parkland fees in lieu of the on site 30 percent open space project requirement:

$$\mathbf{A \times B = C}$$

where:

A = 30 percent open space project requirement or portion thereof (in acres)

B = Assessor's land valuation for the entire project

C = Additional Quimby fees required

3. GABBRO SOILS WORKSHEET

Use the following formulas to calculate additional Gabbro Soils Study Area fees in lieu of the on site 30 percent open space project requirement:

$$\mathbf{A \times B = C ; \text{ then}}$$

$$\mathbf{C \times D \times 2 = E}$$

where:

A = 30 percent open space project requirement or portion thereof (in acres)

B = Maximum project density (as highest number of dwelling units/acre in development plan)

C = Conceptual number of dwelling units within the 30 percent open space project requirement

D = Mitigation Area 1 fee (based on unit type, i.e., single- or multi-unit)

2 = Off site mitigation factor

E = Additional Gabbro Soils Study Area fees required