

## CHAPTER 6

### WATER EFFICIENT LANDSCAPE REGULATIONS

(Ord. 1675, 10 Nov 2015)

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**10-6-1: TITLE:** This Ordinance shall be known and may be cited as the "Water Efficient Landscape Regulations."

**10-6-2: PURPOSE:** It is the policy of the State of California to promote water conservation. It is the policy of the City of Placerville to protect water quality and promote and encourage the installation and maintenance of landscaping in private and public areas appropriate to street type, surrounding architecture and general character of local streets will further to upgrade the visual qualities and functional efficiency of Placerville's local street. The standards detailed in this Chapter are intended to promote the selection, planting and maintenance of landscaping that is water efficient and water conserving, while allowing flexibility in designing healthy, attractive and cost-effective landscapes.

**10-6-3: APPLICABILITY:**

(A) These regulations shall apply to all of the following projects:

1. New development projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check, site plan or other discretionary review;
2. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, site plan or other discretionary review;
3. Existing landscapes limited to Subsection (A) of Section 10-6-15; and
4. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 10-6-5 (E), 10-6-9 (B) and 10-6-10 of this Title; and existing cemeteries are limited to Section 10-6-15.

- (B) Any project with an aggregate landscape area of 2,500 square feet or less may comply with the performance requirements of these regulations or conform to the prescriptive measures contained in Appendix D.
- (C) For projects using treated or untreated graywater or rainwater captured on site, any lot or parcel within the project that has less than 2,500 sq. ft of landscape and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject only to Appendix D section (5).
- (D) These regulations do not apply to:
  - 1. Registered local, state or federal historical sites;
  - 2. Ecological restoration projects that do not require a permanent irrigation system;
  - 3. Mined-land reclamation projects that do not require a permanent irrigation system;
  - 4. Existing plant collections, as part of botanical gardens and arboretums open to the public.
  - 5. Residential landscaping that does not include an irrigation system (e.g. xeriscape landscaping).

**10-6-4: DEFINITIONS:** The terms used in these regulations have the meaning set forth below:

**APPLIED WATER:** The portion of water supplied by the irrigation system to the landscape.

**AUTOMATIC IRRIGATION CONTROLLER:** A timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers are able to self-adjust and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

**BACKFLOW PREVENTION DEVICE:** A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

**CERTIFICATE OF COMPLETION:** The document required under Section 10-6-8.

**CERTIFIED IRRIGATION DESIGNER:** A person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

**CERTIFIED LANDSCAPE IRRIGATION AUDITOR:** A person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

**CHECK VALVE or ANTI-DRAIN VALVE:** A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

CITY: City of Placerville

COMMON INTEREST DEVELOPMENTS: Community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

COMPOST: The safe and stable product of controlled biologic decomposition of organic materials that is beneficial to plant growth.

CONVERSION FACTOR (0.62): The number that converts acre-inches per acre per year to gallons per square foot.

DISTRIBUTION UNIFORMITY: The measure of the uniformity of irrigation water over a defined area.

DRIP IRRIGATION: Any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

ECOLOGICAL RESTORATION PROJECT: A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

EFFECTIVE PRECIPITATION OR USABLE RAINFALL (Eppt): The portion of total precipitation which becomes available for plant growth.

EMITTER: A drip irrigation emission device that delivers water slowly from the system to the soil.

ESTABLISHED LANDSCAPE: The point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

ESTABLISHMENT PERIOD OF THE PLANTS: The first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth. Native habitat mitigation areas and trees may need three to five years for establishment.

ESTIMATED TOTAL WATER USE (ETWU): The total water used for the landscape as described in Section 10-6-5 (E).

ET ADJUSTMENT FACTOR (ETAF): A factor of 0.55 for residential areas and 0.45 for non-residential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. The ETAF for new and existing (non-rehabilitated) Special Landscape Area shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

EVAPOTRANSPIRATION RATE: The quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

FLOW RATE: The rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

FLOW SENSOR: An inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate. Flow sensors must be connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves. This combination flow sensor/controller may also function as a landscape water meter or submeter.

FRIABLE: A soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, whereby the root structure of newly planted material will be allowed to

spread unimpeded.

**FUEL MODIFICATION PLAN GUIDELINE:** Guidelines from a local fire authority to assist residents and businesses that are developing land or building structures in a fire hazard severity zone.

**GRAYWATER:** Untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Health and Safety Code Section 17922.12.

**HARDSCAPES:** Any durable material (pervious and non-pervious).

**HYDROZONE:** A portion of the landscaped area having plants with similar water needs and rooting depth. A hydrozone may be irrigated or non-irrigated.

**INFILTRATION RATE:** The rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

**INVASIVE PLANT SPECIES:** Species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

**IRRIGATION AUDIT:** An in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. The audit must be conducted in a manner consistent with the Irrigation Association's Landscape Irrigation Auditor Certification program or other U.S. Environmental Protection Agency "WaterSense" labeled auditing program.

**IRRIGATION EFFICIENCY (IE):** The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The irrigation efficiency for purposes of these regulations is 0.75 for overhead spray devices and 0.81 for drip systems.

**IRRIGATION SURVEY:** An evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

**IRRIGATION WATER USE ANALYSIS:** An analysis of water use data based on meter readings and billing data.

**LANDSCAPE ARCHITECT:** A person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

**LANDSCAPE AREA:** All the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

**LANDSCAPE CONTRACTOR:** A person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

**LANDSCAPE DOCUMENTATION PACKAGE:** The documents required under Section 10-6-5 (D).

**LANDSCAPE PROJECT:** Total area of landscape in a project as defined in “landscape area” for the purposes of this regulations, meeting requirements under Section 10-6-3.

**LANDSCAPE WATER METER:** An inline device installed at the irrigation supply point that measures the flow of water into the irrigation system and is connected to a totalizer to record water use.

**LATERAL LINE:** The water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

**LOCAL WATER PURVEYOR:** The City, or in some areas of the City, the El Dorado Irrigation District.

**LOW VOLUME IRRIGATION:** The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

**MAIN LINE:** The pressurized pipeline that delivers water from the water source to the valve or outlet.

**MASTER SHUT-OFF VALVE:** An automatic valve installed at the irrigation supply point which controls water flow into the irrigation system. When this valve is closed water will not be supplied to the irrigation system. A master valve will greatly reduce any water loss due to a leaky station valve.

**MAXIMUM APPLIED WATER ALLOWANCE (MAWA):** The upper limit of annual applied water for the established landscaped area as specified in Section 10-6-5 (E). It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.  $MAWA = (ET_o) (0.62) [(ETAF \times LA) + ((1-ETAF) \times SLA)]$ .

**MEDIAN:** An area between opposing lanes of traffic that may be unplanted or planted with trees, shrubs, perennials, and ornamental grasses.

**MICROCLIMATE:** The climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

**MINED-LAND RECLAMATION PROJECTS:** Any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

**MULCH:** Any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

**NEW CONSTRUCTION:** For the purposes of these regulations, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.

**NON-RESIDENTIAL LANDSCAPE:** Landscapes in commercial, institutional, industrial and public settings that may have areas designated for recreation or public assembly. It also includes portions of common areas of common interest developments with designated recreational areas.

**OPERATING PRESSURE:** The pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

**OVERHEAD SPRINKLER IRRIGATION SYSTEMS:** Systems that deliver water through the air (e.g., spray heads and rotors).

**OVERSPRAY:** Irrigation water which is delivered beyond the target area.

**PERMIT:** An authorizing document issued by the City for new construction or rehabilitated landscapes.

**PERVIOUS:** Any surface or material that allows the passage of water through the material and into the underlying soil.

**PLANT FACTOR or PLANT WATER USE FACTOR:** A factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of these regulations, the plant factor range for very low water use plants is 0 to 0.1, the plant factor range for moderate water use plants is 0.1 to 0.3, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in these regulations are derived from the publication "Water Use Classification of Landscape Species". Plant factors may also be obtained from horticultural researchers from academic institutions or professional associations as approved by the California Department of Water Resources (DWR).

**PROJECT APPLICANT:** The individual or entity submitting a Landscape Documentation Package required under Section 10-6-5 (D), to request a permit, plan check, or design review from the City. A project applicant may be the property owner or his or her designee.

**RAIN SENSOR or RAIN SENSING SHUTOFF DEVICE:** A component which automatically suspends an irrigation event when it rains.

**RECORD DRAWING OR AS-BUILTS:** A set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

**RECREATIONAL AREA:** Areas, excluding private single family residential areas, designated for active play, recreation or public assembly in parks, sports fields, picnic grounds, amphitheaters or golf course tees, fairways, roughs, surrounds and greens.

**RECYCLED WATER, RECLAIMED WATER, or TREATED SEWAGE EFFLUENT WATER:** Treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

**REFERENCE EVAPOTRANSPIRATION or ETo:** A standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Appendix A, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.

**REHABILITATED LANDSCAPE:** Any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 10-6-3, and the modified landscape area is equal to or greater than 2,500 square feet.

**RESIDENTIAL LANDSCAPE:** Landscapes surrounding single or multifamily homes.

**RUNOFF:** Water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

**SOIL MOISTURE SENSING DEVICE or SOIL MOISTURE SENSOR:** A device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

**SOIL TEXTURE:** The classification of soil based on its percentage of sand, silt, and clay.

**SPECIAL LANDSCAPE AREA (SLA):** An area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, or water features using recycled water.

**SPRINKLER HEAD:** A device which delivers water through a nozzle.

**STATIC WATER PRESSURE:** The pipeline or municipal water supply pressure when water is not flowing.

**STATION:** An area served by one valve or by a set of valves that operate simultaneously.

**SWING JOINT:** An irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

**SUBMETER:** A metering device to measure water applied to the landscape that is installed after the primary utility water meter.

**TURF:** A ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

**VALVE:** A device used to control the flow of water in the irrigation system.

**WATER CONSERVING PLANT SPECIES:** A plant species identified as having a very low or low plant factor.

**WATER FEATURE:** A design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

**WATERING WINDOW:** The time of day irrigation is allowed.

**WUCOLS:** The Water Use Classification of Landscape Species published by the University of California Cooperative Extension and the Department of Water Resources 2014.

**10-6-5: LANDSCAPE DESIGN PLAN:**

- (A) Consistency with Specific Plans, other design guidelines and design criteria: Other regulations and design criteria affecting landscape design and maintenance practices are potentially applicable and should be consulted for additional requirements. These regulations include but may not be limited to:

1. Zoning Code, including projects subject to Section 10-4-9;
2. The *City of Placerville Development Guide*;
3. The City's Design and Construction Standards Manual;
4. El Dorado County Fire Protection District regulations for fire hazard reduction and fuel modification zones;
5. Any conditions of approval for a specific project;
6. California Building Code;
7. El Dorado Irrigation District design and construction standards.

Where any inconsistencies arise between this Chapter and other adopted policy documents, the more restrictive requirement shall govern.

- (B) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

1. Plant Material

- (a) Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. Methods to achieve water efficiency shall include one or more of the following:

1. Protection and preservation of native species and natural vegetation;
2. Selection of water-conserving plant, tree and turf species, especially local native plants;
3. Selection of plants based on local climate suitability, disease and pest resistance;
4. Selection of trees based on applicable local tree regulations or tree shading guidelines, and size at maturity as appropriate for the planting area;
5. Selection of plants from City and local landscape program plant lists; and
6. Selection of plants from local Fuel Modification Plan Guidelines.

- (b) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 10-6-6 (A).

- (c) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Methods to achieve water efficiency shall include one or more of the following:

1. Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
  2. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; allow for adequate soil volume for healthy root growth, and
  3. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
- (d) Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
  - (e) High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.
  - (f) A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.
  - (g) The use of invasive plant species, such as those listed by the California Invasive Plant Council, is strongly discouraged.
  - (h) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
2. Water Features
    - (a) Recirculating water systems shall be used for water features.
    - (b) Where available, recycled water shall be used as a source for decorative water features.
    - (c) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
    - (d) Pool and spa covers are highly recommended.
  3. Soil Preparation, Mulch and Amendments
    - (a) Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
    - (b) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 10-6-5 (F)).

- (c) For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area shall be incorporated to a depth of six inches into the soil. Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.
  - (d) A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to 5 % of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.
  - (e) Stabilizing mulching products shall be used on slopes that meet current engineering standards.
  - (f) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
  - (g) Organic mulch materials made from recycled or post-consumer shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available. Organic mulches are not required where prohibited by local Fuel Modification Plan Guidelines or other applicable local regulations.
- (C) The landscape design plan, at a minimum, shall:
1. Delineate and label each hydrozone by number, letter, or other method;
  2. Identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
  3. Identify recreational areas;
  4. Identify areas permanently and solely dedicated to edible plants;
  5. Identify areas irrigated with recycled water;
  6. Identify type of mulch and application depth;
  7. Identify soil amendments, type, and quantity;
  8. Identify type and surface area of water features;
  9. Identify hardscapes (pervious and non-pervious);
  10. Identify location and installation details, and 24-hour retention or infiltration capacity of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Project applicants shall refer to the City or regional Water Quality Control Board for information on any applicable stormwater technical requirements. Stormwater best management practices are encouraged in the landscape design plan and examples are provided in Section 10-6-14.

11. Identify any applicable rain harvesting or catchment technologies as discussed in Section 16 and their 24-hour retention or infiltration capacity;
12. Identify any applicable graywater discharge piping, system components and area(s) of distribution;
13. Contain the following statement: "I have complied with the criteria of the regulations and applied them for the efficient use of water in the landscape design plan"; and
14. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.).

(D) Elements of the Landscape Documentation Package.

1. The Landscape Documentation Package shall include the following six (6) elements:

(a) Project information:

- (A) Date.
- (B) Project applicant.
- (C) Project address (if available, parcel and/or lot number(s)).
- (D) Total landscape area (square feet).
- (E) Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed).
- (F) Water supply type (e.g., potable, recycled, well) *and identify the local retail water purveyor if the applicant is not served by a private well.*
- (G) Checklist of all documents in Landscape Documentation Package.
- (H) Project contacts to include contact information for the project applicant and property owner.
- (I) Applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape regulations and submit a complete Landscape Documentation Package."

(b) Water Efficient Landscape Worksheet:

- (A) Hydrozone information table
- (B) Water budget calculations
  1. Maximum Applied Water Allowance (MAWA)
  2. Estimated Total Water Use (ETWU)

- (c) Soil management report;
- (d) Landscape design plan;
- (e) Irrigation design plan; and
- (f) Grading design plan

(E) Water Efficient Landscape Worksheet:

1. A project applicant shall complete the Water Efficient Landscape Worksheet which contains information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydrozone. Calculations are then made to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA.
  - (a) In calculating the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A.
2. Water budget calculations shall adhere to the following requirements:
  - (a) The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for very low water using plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
  - (b) All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
  - (c) All Special Landscape Areas shall be identified and their water use calculated as shown in Appendix B.
  - (d) ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

(F) Soil Management Report:

1. In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:
  - (a) Submit soil samples to a laboratory for analysis and recommendations.

- (1) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
  - (2) The soil analysis shall include:
    1. soil texture;
    2. infiltration rate determined by laboratory test or soil texture infiltration rate table;
    3. pH;
    4. total soluble salts;
    5. sodium;
    6. percent organic matter; and
    7. recommendations.
  - (3) In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of 1 in 7 lots or approximately 15% will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to 1 in 7 lots.
2. The project applicant, or his/her designee, shall comply with one of the following:
    - (a) If significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package; or
    - (b) If significant mass grading is planned, the soil analysis report shall be submitted to the City as part of the Certificate of Completion.
  3. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
  4. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the City with Certificate of Completion.

**10-6-6: IRRIGATION DESIGN PLAN:**

(A) This section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.

**1. System**

- (a) Landscape water meters, defined as either a dedicated water service meter or private submeter shall be installed for all non-residential irrigated landscapes of 1,000 sq. ft. but not more than 5,000 sq.ft. (the level at which *Water Code* 535 applies) and residential irrigated landscapes of 5,000 sq. ft. or greater. A landscape water meter may be either:

1. A customer service meter dedicated to landscape use provided by the local water purveyor; or
  2. A privately owned meter or submeter.
- (b) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.
- (c) If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
  2. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
- (d) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
- (e) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
- (f) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable City code (i.e., public health) for additional backflow prevention requirements.
- (g) Flow sensors that detect high flow conditions created by system damage or malfunction are required for all non-residential landscapes and residential landscapes of 5000 sq. ft. or larger.
- (h) Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.
- (i) The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water

flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

- (j) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
- (k) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
- (l) The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 492.4 regarding the Maximum Applied Water Allowance.
- (m) It is highly recommended that the project applicant or City inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- (n) All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers/International Code Council's (ASABE/ICC) 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard. All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
- (o) It is highly recommended that the project applicant or City inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- (p) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
- (q) Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
- (r) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
- (s) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turfgrass.
- (t) Check valves or anti-drain valves are required on all sprinkler heads where low point discharge could occur.
- (u) Areas less than ten (10) feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.
- (v) Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-

spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:

1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
2. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
3. The irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 10-6-5. Prevention of overspray and runoff must be confirmed during the irrigation audit.

(w) Slopes greater than 25% shall not be irrigated with an irrigation system with a application rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

## 2. Hydrozone

- (a) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- (b) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
- (c) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.
- (d) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
  1. The plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
  2. The plant factor of the higher water using plant is used for calculations.
- (e) Individual hydrozones that mix high and low water use plants shall not be permitted.
- (f) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.

## 3. The irrigation design plan, at a minimum, shall contain:

- (a) Location and size of separate water meters for landscape;
- (b) Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
- (c) Static water pressure at the point of connection to the public water supply;
- (d) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
- (e) Recycled water irrigation systems as specified in Section 10-6-12;
- (f) The following statement: "I have complied with the criteria of the regulations and applied them accordingly for the efficient use of water in the irrigation design plan"; and
- (g) The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

**10-6-7: GRADING DESIGN PLAN:**

- (A) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other City permits satisfies this requirement.
  - 1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
    - (a) height of graded slopes;
    - (b) drainage patterns;
    - (c) pad elevations;
    - (d) finish grade; and
    - (e) stormwater retention improvements, if applicable.
  - 2. To prevent excessive erosion and runoff, it is highly recommended that project applicants:
    - (a) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
    - (b) avoid disruption of natural drainage patterns and *undisturbed soil*; and

(c) avoid soil compaction in landscape areas.

3. The grading design plan shall contain the following statement: "I have complied with the criteria of the regulations and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

**10-6-8: CERTIFICATE OF COMPLETION:**

(A) Prior to issuance of a certificate of occupancy, a signed landscape certificate of completion shall be submitted to the Development Services Department on a form prescribed by the Department that shall include the following information and documentation:

1. Project information sheet that contains:
  - (a) Date;
  - (b) Project name;
  - (c) Project applicant name, telephone, and mailing address;
  - (d) Project address and location; and
  - (e) Property owner name, telephone, and mailing address;
2. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;
  - (a) Where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;
  - (b) A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.
3. Irrigation scheduling parameters used to set the controller (see Section 10-6-9);
4. Landscape and irrigation maintenance schedule (see Section 10-6-9);
5. Irrigation audit report (see Section 10-6-10); and
6. Soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 10-6-5).

(B) The project applicant shall:

1. Submit the signed Certificate of Completion to the City (Development Services Department) for review;
2. Ensure that copies of the approved Certificate of Completion *are submitted* to the local water purveyor and property owner or his or her designee.

(C) The City shall:

1. Receive the signed Certificate of Completion from the project applicant;
2. Approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the City shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

**10-6-9: IRRIGATION SCHEDULING AND MAINTENANCE:**

(A) Irrigation Scheduling: For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

1. Irrigation scheduling shall be regulated by automatic irrigation controllers.
2. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
4. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
  - (a) The plant establishment period;
  - (b) The established landscape; and
  - (c) Temporarily irrigated areas.
5. Each irrigation schedule shall consider for each station all of the following that apply:
  - (a) Irrigation interval (days between irrigation);
  - (b) Irrigation run times (hours or minutes per irrigation event to avoid runoff);
  - (c) Number of cycle starts required for each irrigation event to avoid runoff;
  - (d) Amount of applied water scheduled to be applied on a monthly basis;
  - (e) Application rate setting;
  - (f) Root depth setting;

- (g) Plant type setting;
- (h) Soil type;
- (i) Slope factor setting;
- (j) Shade factor setting; and
- (k) Irrigation uniformity or efficiency setting.

(B) Landscape and Irrigation Maintenance

1. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
2. A regular maintenance schedule shall include, but not be limited to, routine inspection; auditing, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
3. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.
4. A project applicant is encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.

**10-6-10: IRRIGATION WATER USE ANALYSIS AND MONITORING:**

- (A) All landscape irrigation audits shall be conducted by a City landscape irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape.
- (B) In large projects or projects with multiple landscape installations (i.e. production home developments) an auditing rate of 1 in 7 lots or approximately 15% will satisfy this requirement.
- (C) For new construction and rehabilitated landscape projects installed after December 1, 2015, as described in Section 10-6-3:
  1. The project applicant shall submit an irrigation audit report with the Certificate of Completion to the City that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule, including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;
  2. The City shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

**10-6-11:            IRRIGATION EFFICIENCY:**

- (A)     For the purpose of determining Estimate Total Water Use, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.

**10-6-12:            RECYCLED WATER:**

- (A)     The installation of recycled water irrigation systems shall allow for the current and future use of recycled water.
- (B)     All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
- (C)     Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0.

**10-6-13:            GRAYWATER SYSTEMS:**

- (A)     Graywater systems promote the efficient use of water and are encouraged to assist in on-site landscape irrigation. All graywater systems shall conform to the California Plumbing Code (Title 24, Part 5, Chapter 16) and any applicable local regulations standards. Refer to §490.1 (d) for the applicability of this regulations to landscape areas less than 2,500 square feet with the Estimated Total Water Use met entirely by graywater.

**10-6-14:            STORMWATER MANAGEMENT AND RAINWATER RETENTION:**

- (A)     Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site rainwater retention and infiltration are encouraged.
- (B)     Project applicants shall refer to the City of Placerville Design and Construction Standards Manual.
- (C)     All planted landscape areas are required to have friable soil to maximize water retention and infiltration. Refer to Section 10-6-5.
- (D)     It is strongly recommended that all landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: the one inch, 24-hour rain event or (2) the 85th percentile, 24-hour rain event, and/or additional capacity as required by any applicable local, regional, state or federal regulation. See the City of Placerville Design and Construction Standards for the required hydraulic sizing criteria that apply to projects that create or replace more than 5,000 square feet of impervious surfaces.
- (E)     It is recommended that storm water projects incorporate any of the following elements to improve on-site storm water and dry weather runoff capture and use:
  - 1.     Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas.

2. Minimize the area of impervious surfaces such as paved areas, roof and concrete driveways.
3. Incorporate pervious or porous surfaces (e.g., gravel, permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
4. Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse.
5. Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems.
6. Incorporate infiltration beds, swales, basins and drywells to capture storm water and dry weather runoff and increase percolation into the soil.
7. Consider constructed wetlands and ponds that retain water, equalize excess flow, and filter pollutants.

**10-6-15: PROVISIONS FOR EXISTING LANDSCAPES INSTALLED PRIOR TO DECEMBER 1, 2015:**

(A) This Section, 10-6-15, shall apply to all existing landscapes that were installed before December 1, 2015 and are over one acre in size.

1. For all landscapes in 10-6-15(A) that have a water meter, the City shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as:  $MAWA = (0.8) (ET_o)(LA)(0.62)$ .
2. For all landscapes in 10-6-15(A), that do not have a meter, the City shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(B) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

**10-6-16: VIOLATION; PENALTY:** Violations of this Chapter, unless otherwise accepted, are considered administrative violation of City Code, subject to enforcement procedures under Section 1-4A-1 et. seq. of City Code.

# **Appendix A - Reference Evapotranspiration (ETo) Table\***

|             | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual<br>ETo |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|
| Placerville | 1.41 | 1.88 | 2.99 | 4.47 | 5.91 | 7.46 | 9.00 | 8.21 | 6.23 | 4.19 | 1.84 | 1.37 | 56.96         |

\* The values in this table were derived from Table 2-1, (DWR Table 3) Climate Characteristics of the 2005 Urban Water Management Plan for the City of Placerville.

## **Appendix B – Sample Water Efficient Landscape Worksheet.**

### **Reference Evapotranspiration (ETo)\_\_\_\_\_**

| Hydrozone #<br>/Planting<br>Description <sup>a</sup> | Plant<br>Factor<br>(PF) | Irrigation<br>Method <sup>b</sup> | Irrigation<br>Efficiency<br>(IE) <sup>c</sup>          | ETAF<br>(PF/IE) | Landscape<br>Area<br>(sq, ft.) | ETAF<br>x<br>Area | Estimated<br>Total Water<br>Use<br>(ETWU) <sup>d</sup> |
|------------------------------------------------------|-------------------------|-----------------------------------|--------------------------------------------------------|-----------------|--------------------------------|-------------------|--------------------------------------------------------|
| Regular Landscape Areas                              |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        | Totals          | (A)                            | (B)               |                                                        |
| Special Landscape Areas                              |                         |                                   |                                                        |                 |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        | 1               |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        | 1               |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        | 1               |                                |                   |                                                        |
|                                                      |                         |                                   |                                                        | Totals          | (C)                            | (D)               |                                                        |
|                                                      |                         |                                   | ETWU Total                                             |                 |                                |                   |                                                        |
|                                                      |                         |                                   | Maximum Allowed Water Allowance<br>(MAWA) <sup>e</sup> |                 |                                |                   |                                                        |

<sup>a</sup>Hydrozone #/Planting Description  
E.g  
1.) front lawn  
2.) low water use plantings  
3.) medium water use planting

<sup>b</sup>Irrigation Method  
overhead spray or drip

<sup>c</sup>Irrigation Efficiency  
0.75 for spray head,  
0.81 for drip

<sup>d</sup>ETWU (Annual Gallons Required) = ETo x 0.62 x ETAF x Area  
where 0.62 is a conversion factor that acre-inches per acre per year to gallons per square foot per year.

<sup>e</sup>MAWA (Annual Gallons Allowed) = (ETo) ( 0.62) [ (ETAF x LA) + ((1-ETAF) x SLA)]  
 where 0.62 is a conversion factor that acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet, SLA is the total special landscape area in square feet,  
 and ETAF is .55 for residential areas and 0.45 for non-residential areas.

#### ETAF Calculations

Regular Landscape Areas

All Landscape Areas

|                   |       |  |                   |               |
|-------------------|-------|--|-------------------|---------------|
| Total ETAF x Area | (B)   |  | Total ETAF x Area | (B+D)         |
| Total Area        | (A)   |  | Total Area        | (A+C)         |
| Average ETAF      | B ÷ A |  | Average ETAF      | (B+D) ÷ (A+C) |

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

## Appendix C – Sample Certificate of Completion.

### CERTIFICATE OF COMPLETION

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

#### PART 1. PROJECT INFORMATION SHEET

|                           |                |          |
|---------------------------|----------------|----------|
| Date                      |                |          |
| Project Name              |                |          |
| Name of Project Applicant | Telephone No.  |          |
|                           | Fax No.        |          |
| Title                     | Email Address  |          |
| Company                   | Street Address |          |
| City                      | State          | Zip Code |

#### Project Address and Location:

|                |          |                                            |
|----------------|----------|--------------------------------------------|
| Street Address |          | Parcel, tract or lot number, if available. |
| City           |          | Latitude/Longitude (optional)              |
| State          | Zip Code |                                            |

#### Property Owner or his/her designee:

|         |                |          |
|---------|----------------|----------|
| Name    | Telephone No.  |          |
|         | Fax No.        |          |
| Title   | Email Address  |          |
| Company | Street Address |          |
| City    | State          | Zip Code |

#### Property Owner

"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."

---

Property Owner Signature

Date

**Please answer the questions below:**

1. Date the Landscape Documentation Package was submitted to the City\_\_\_\_\_
2. Date the Landscape Documentation Package was approved by the City\_\_\_\_\_
3. Date that a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to the local water purveyor\_\_\_\_\_

**PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE**

"I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the regulations 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                            | Email Address  |          |
| License No. or Certification No. |                |          |
| Company                          | Street Address |          |
| City                             | State          | Zip Code |

\*Signer of the landscape design plan, signer of the irrigation plan, or a licensed landscape contractor.

**PART 3. IRRIGATION SCHEDULING**

Attach parameters for setting the irrigation schedule on controller per regulations Section 10-6-8.

**PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE**

Attach schedule of Landscape and Irrigation Maintenance per regulations Section 10-6-8.

**PART 5. LANDSCAPE IRRIGATION AUDIT REPORT**

Attach Landscape Irrigation Audit Report per regulations Section 10-6-9.

**PART 6. SOIL MANAGEMENT REPORT**

Attach soil analysis report, if not previously submitted with the Landscape Documentation Package per regulations Section 10-6-4.

Attach documentation verifying implementation of recommendations from soil analysis report per regulations Section 10-6-4.

## **Appendix D –Water Efficient Landscape Worksheet**

### **Prescriptive Compliance Option**

- (a) This appendix contains prescriptive requirements which may be used as a compliance option to the Model Water Efficient Landscape Regulations.
- (b) Compliance with the following items is mandatory and must be documented on a landscape plan in order to use the prescriptive compliance option:
  - (1) Submit a Landscape Documentation Package which includes the following elements:
    - (A) date
    - (B) project applicant
    - (C) project address (if available, parcel and/or lot number(s))
    - (D) total landscape area (square feet), including a breakdown of turf and plant material
    - (E) project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
    - (F) water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
    - (G) contact information for the project applicant and property owner
    - (H) applicant signature and date with statement, "I agree to comply with the requirements of the prescriptive compliance option to the MWELO".
  - (2) Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);
  - (3) Plant material shall comply with all of the following;
    - (A) For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; For non-residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water;
    - (B) A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
  - (4) Turf shall comply with all of the following:
    - (A) Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas;

- (B) Turf shall not be planted on sloped areas which exceed a slope of 1 foot vertical elevation change for every 4 feet of horizontal length;
  - (C) Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to a parking strip and used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.
- (5) Irrigation systems shall comply with the following:
- (A) Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data.
  - (B) Irrigation controllers shall be of a type which does not lose programming date in the event the primary power source is interrupted.
  - (C) Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.
  - (D) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.
  - (E) All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014. "Landscape Irrigation Sprinkler and Emitter Standard," All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
- (c) At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule and a schedule of landscape and irrigation maintenance.