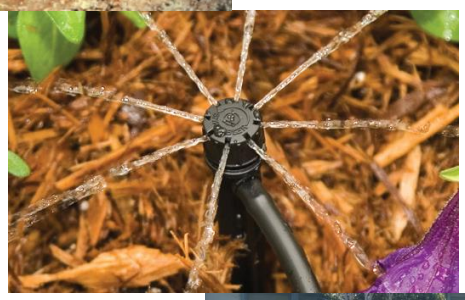


City of Temple City

Water Efficient Landscape Guidelines





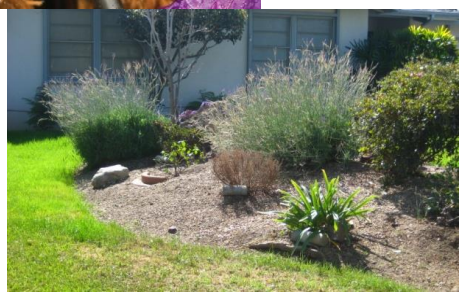


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1. Purpose, Applicability, and Amendment

1.1 Purpose

(A) The primary purpose of these Guidelines is to provide procedural and design guidance for *project applicants* proposing landscape installation or rehabilitation projects that are subject to the requirements of the *Water Efficient Landscape Ordinance*. This document is also intended for use and reference by *City* staff in reviewing and approving designs and verifying compliance with the *Water Efficient* Landscape *Ordinance*. The general goal of the *Water Efficient Landscape Ordinance* is to promote the design, installation, and maintenance of landscaping in a manner that conserves regional water resources by ensuring that landscaping projects are not unduly water-needy and that irrigation systems are appropriately designed and installed to minimize water waste.

(B) Other regulations 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) State of California Assembly Bill 1881;

(2) National Pollutant Discharge Elimination Permit for the Municipal Separate Storm Sewer System;

(3) Water Conservation and Drought Response Regulations of the Local Water Purveyor;

(4) Regulations of the Local Water Purveyor governing use of *Recycled Water*;

(5) Zoning Code;

(6) Building Code;

(7) Specific Plans, Master Plans, General Plan, or similar land use and planning documents; and

(8) Conditions of approval for a specific project

1.2 Applicability

(A) The *Water Efficient Landscape Ordinance* and these Guidelines apply to all of the following landscape projects:

(1) New landscape projects with an *aggregate* landscape area equal to or greater than 500 square feet, requiring a building or landscape permit, plan check or design 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 or design review;

(3) New or rehabilitated landscape projects with an *aggregate* landscape area of 2,500 square feet or less may comply with the performance requirements of this ordinance or conform to the prescriptive measures contained in Appendix A ;

(4) New or rehabilitated projects using treated or untreated *graywater* or rainwater capture on site, any lot or parcels within the project that has less than 2,500 square feet of landscape area and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with the treated or untreated *graywater* or though stored rainwater capture on site is subject only to Appendix A Section (5).

(B) The requirements of the Guidelines may be partially or wholly waived, at the discretion of the *City* or its designee, for landscape rehabilitation projects that are limited to replacement plantings with equal or lower water needs and where the irrigation system is found to be designed, operable and programmed consistent with minimizing water waste in accordance with local water purveyor regulations.

(C) Unless otherwise determined by the *City*, the *Water Efficient Landscape Ordinance* and these Guidelines 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; or

(4) Plant collections, as part of botanical gardens, and arboretums open to the public.

1.3 Amendment(s)

The City can amend this Guidelines from time to time for the purpose of effectively implementing the goals of the City's Water Efficient Landscape Ordinance. Any amendment shall require the review and approval of the Planning Commission at a noticed public hearing.

2. Submittal Requirements for New Landscape Installations or Landscape Rehabilitation Projects

Discretionary approval is typically required for landscape projects that are subject to site plan reviews, or where a variance or a Conditional Use Permit is requested, or other procedural processes apply such that standard or special conditions of approval may be required by the *City*. Discretionary projects with conditions of approval may be approved administratively by *City* staff, or acted on formally by the Planning Commission, *City* Council, or other jurisdictional authority. A typical standard condition of approval reads:

> *"Landscaping for the project shall be designed to comply with the City's Water Efficient Landscape Ordinance and with the Guidelines for Implementation of the Water Efficient Landscape Ordinance."*

Landscape or *water features* that typically require a ministerial permit (i.e., a building, plumbing, electrical, or other similar permit), thereby triggering compliance with the Water Efficient Landscape Ordinance requirements independently of the need for discretionary approval include, but are not limited to, swimming pools, fountains or ponds, retaining walls, and overhead trellises.

2.1 Elements of the Landscape Documentation Package

A *Landscape Documentation Package* is required to be submitted by the *project applicant* for review and approval prior to the issuance of ministerial permits for landscape or *water features* by the *City*, and prior to start of construction. Unless otherwise directed by the *City*, the *Landscape*

Documentation Package shall include the following elements either on plan sheets or supplemental pages as directed by the *City*:

(1) Project Information, including, but not limited to, the following:

(a) Date;

(b) Project name;

(c) Project address, parcel, and/or lot number(s);

(d) Total *landscape area* (square feet) and rehabilitated *landscape area* (if applicable);

(e) Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed);

(f) Water supply type (e.g., potable, recycled, or well) and identification of the local retail water purveyor if the *project applicant* is not served by a private well;

(g) Checklist or index of all documents in the *Landscape Documentation Package*;

(h) Project contacts, including contact information for the *project applicant* and *property owner*;

(i) *Certification of Design* in accordance with **Exhibit A** of these *Guidelines* that includes a *landscape professional's* professional stamp, as applicable, signature, contact information (including email and telephone number), license number, and date, certifying the statement that "The design of this project complies with the requirements of the *City*'s *Water Efficient Landscape Ordinance*" and shall bear the signature of the *landscape professional* as required by law; and

(j) Any other information the *City* deems relevant for determining whether the landscape project complies with the *Water Efficient Landscape Ordinance* and these *Guidelines*.

(2) *Maximum Applied Water Allowance* (*MAWA*) and *Estimated Total Water Use* (*ETWU*) expressed as annual totals including, but not limited to, the following:

(a) *Water Efficient Landscape Worksheet* for the landscape project;

(b) *Hydrozone* information table for the landscape project; and

(c) Water budget calculations for the landscape project.

(3) A soil management report or specifications, or specification provision requiring soil testing and amendment recommendations and implementation to be accomplished during construction of the landscape project.

(4) A landscape design plan for the landscape project.

(5) An irrigation design plan for the landscape project.

(6) A grading design plan, unless grading information is included in the landscape design plan for the landscape project or unless the landscape project is limited to replacement planting and/or irrigation to rehabilitate an existing landscape area.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.2 Water Efficient Landscape Calculations and Alternatives

(A) The *project applicant* shall provide the calculated *Maximum Applied Water Allowance* (MAWA) and *Estimated Total Water Use* (ETWU) for the landscape area as part of the *Landscape Documentation Package* submittal to the *City*. The MAWA and ETWU shall be calculated based on completing the *Water Efficient Landscape Worksheets* (in accordance with the sample worksheets in **Appendix C**) which contain 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*, which shall be calculated using an ETAF of 1.0. The ETAF for a landscape project is based on the *plant factors* and irrigation methods selected. The *Maximum Total*

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 ETWU is calculated based on the plants used and irrigation method selected for the landscape design.

(B) Where the design of the landscape area can otherwise be shown to be equivalently water-efficient, the *project applicant* may submit alternative or abbreviated information supporting the demonstration that the annual ETWU is less than the MAWA, at the discretion of and for the review and approval of the local agency.

(C) Water budget calculations shall adhere to the following requirements:

(1) The *MAWA* shall be calculated using the *Water Efficient Landscape Worksheets* and equation presented in **Appendix C**. The example calculation on page 27 is a hypothetical example to demonstrate proper use of the equation.

(2) The *ETWU* shall be calculated using the *Water Efficient Landscape Worksheet* and equations presented in **Appendix C**.

(3) For the calculation of the *MAWA* and *ETWU*, a *project applicant* shall use the *ETo* value of 50.2 for Temple City as it is the closest location to a reference city as provided in the *Reference Evapotranspiration* Table in **Appendix D**.

(4) For calculation of the *ETWU*, the *plant water use factor* shall be determined as appropriate to the project location from the *Water Use Efficiency of Landscape Species* (*WUCOLS*) Species Evaluation List 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 use plants, 0.1 to 0.3 for low water use plants, 0.4 to 0.6 for moderate water use plants, and 0.7 to 1.0 for high water use plants.

(5) For calculating the *ETWU*, the *plant water use factor* shall be determined for each *valve hydrozone* based on the highest-water-use plant species within the zone. The *plant factor* for each *hydrozone* may be required to be further refined as a "*landscape coefficient*," according to protocols defined in detail in the *WUCOLS*

document, to reflect planting density and *microclimate* effects on water need at the option of the *project applicant* or the *City*.

(6) For calculation of the *ETWU*, the area of a *water feature* shall be defined as a high water use *hydrozone* with a *plant factor* of 1.0.

(7) For calculation of the *ETWU*, a temporarily irrigated *hydrozone* area, such as an area of highly drought-tolerant native plants that are not intended to be irrigated after they are fully established, shall be defined as a very low water use *hydrozone* with a *plant factor* of 0.1.

(8) For calculation of the *MAWA*, the *ETAF* for S*pecial Landscape Areas (SLA)* shall be set at 1.0. For calculation of the *ETWU*, the *ETAF* for SLA shall be calculated as the *SLA plant factor* divided by the *SLA irrigation efficiency factor*.

(9) *Irrigation efficiency (IE)* of the irrigation heads used within each *hydrozone* shall be assumed to be as follows, unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the *project applicant*:

Irrigation Method	**DU_{LQ}**	**DU_{LH}***	**EU**	**IE****
Spray nozzles	65%	79%		71%
High efficiency spray nozzles	70%	82%		73%
Multi stream/Multi trajectory rotary (MSMT) nozzles	75%	85%		76%
Stream rotor nozzle	70%	82%		73%
Microspray	75%	85%		76%
Bubblers			85%	77%
Drip emitter			90%	81%
Subsurface drip			90%	81%

*DU_{LH} = .386 + (.614)(DU_{LQ})

** IE (spray) = (DU_{LH})(IME)

** IE (drip) = Emission uniformity (EU)(IME)

(D) The *Maximum Applied Water Allowance* shall adhere to the following requirements:

(1) The *Maximum Applied Water Allowance* shall be calculated using the equation presented in **Appendix C**. The *reference evapotranspiration* (*ETo*) value of 50.2 used for this calculation are

from the *Reference Evapotranspiration* Table in **Appendix D** and are for planning purposes only. For actual irrigation scheduling, automatic irrigation controllers are required and shall use current *ETo* data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

2.3 Soil and Stormwater Management

(A) All planted landscape areas are required to have friable soil to maximize retention and infiltration. On engineered slopes, only amended planting holes need meet this requirement.

(B) 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:

(1) Submit soil samples to a certified agronomic soils laboratory for analysis and recommendations.

(a) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(b) The soil analysis may include, but is not limited to:

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.

(2) In projects with multiple landscape installations (i.e. production home developments or common interest developments that are installing landscaping) a soil sampling rate of 1 in 7 lots or

approximately 15% will satisfy this requirement; evenly disbursed throughout the development. Large landscape projects shall sample at a rate equivalent to 1 in 7 lots or approximately 15% landscape area. 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 local agency 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 *Certification of Completion*.

(c) The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans in order to make any necessary adjustments to the design plans.

(d) The *project applicant*, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with the Certification of Completion.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

(C) It is strongly recommended that 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 additional capacity as required by the City's Low Impact Development Standards as well any applicable regional, state, or federal regulation.

(D) It is recommended that storm water projects incorporate any of the following elements to improve on-site stormwater and dry weather *runoff* capture and use:

(1) Grade impervious surfaces, such as driveways, during construction to drain into 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 landscape 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 stormwater 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.

[Note: Authority cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.4 Landscape Design Plan

(A) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. 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 area* provided the *ETWU* in the *landscape area* does not exceed the *MAWA*. Methods to achieve water efficiency shall include one or more of the following:

(2) Protection and preservation of non-*invasive* water-conserving plant, tree and *turf* species;

(3) Selection of water-conserving plant, tree and *turf* species;

(4) Selection of plants based on local climate suitability, disease and pest resistance;

(5) Selection of trees based on applicable *City* and local tree ordinances or tree shading guidelines, and size at maturity as appropriate for the planting area; and

(6) Selection of plants from local and regional landscape program plant lists.

(7) 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 2.5(a)(2)(D) of these *Guidelines*.

(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, or equivalent generally accepted models, 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, and 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 discouraged 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) The use of *invasive* plant species plant species, such as those listed by the California Invasive Plat Council, is strongly discouraged.

(G) 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 water efficient plant species as a group.

(1) Water Features

(a) Recirculating water systems shall be used for *water features*.

(b) Where available and consistent with public health guidelines, *recycled water* shall be used as a source for decorative *water features*.

(c) The 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.

(2) *Soil Preparation*, *Mulch* and Amendments

(a) Prior to planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need to meet this requirement.

(b) Soil amendments shall be incorporated according to the recommendations of the soil report and what is appropriate for plants selected.

(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 such as those detailed in the USDA/USAID Low-Volume Roads Engineering Best Management Practices Field Guide.

(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 ordinances.

(H) 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 area* 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 storm water best management

practices that encourage on-site retention and infiltration of storm water. *Project applicants* shall refer to the local agency or regional Water Quality Control Board for information on any applicable stormwater technical requirements. Storm water best management practices are encouraged in the landscape design plan and examples are provided in Section 2.4(C)-(D).

(11) Identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);

(12) Contain the following statement: "I have complied with the criteria of the *Water Efficient Landscape Ordinance* and applied them for the efficient use of water in the landscape design plan;" and

(13) Bear the signature of a California-licensed *landscape professional*.

[Note: Authority Cited: Section 65595, Reference: Section 65596, Government Code and Section 1351, Civil Code.]

2.5 Irrigation Design Plan

This section applies to landscape 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 manufacturer's 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 sub meter, 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 sub meter.

(b) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data with non-volatile memory shall be required for irrigation scheduling in all irrigation systems, recommending U.S. EPA WaterSense labeled devices as applicable.

(c) *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.

(d) 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.

(e) *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.

(f) A *master shutoff valve* shall be as close as possible to the point of connection and is required on all projects; with the exception for 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.

(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 5,000 sq. ft. or larger. The flow sensor must be in combination with a *master shut-off valve*.

(h) *Manual isolation valves* (such as a gate *valve*, ball *valve*, or butterfly *valve*) shall be required downstream of 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.

(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) 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 ASBE/ICC 802-2014.

(m) Average *irrigation efficiency* (IE) for the project shall be determined in accordance with the ETWU calculation sheet in **Appendix B**. Unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the *project applicant***,** the *irrigation efficiency* of the irrigation heads used within each *hydrozone* shall as listed in Section 2.3(C)(9).

(n) It is highly recommended that the *project applicant* or local agency 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.

(o) In *mulched* planting areas, the use of *low volume irrigation (drip or low volume overhead irrigation)* is required to maximize water infiltration into the root zone; with the exception of areas with fuel modification requirements and/or those that require plant establishment to comply with local grading ordinances.

(p) *Sprinkler heads* and other emission devices shall have matched *precipitation rates*, unless otherwise directed by the manufacturer's recommendations.

(q) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible *distribution uniformity* using the manufacturer's recommendations.

(r) *Swing joint* components are required on all sprinklers subject to damage that are adjacent to *hardscapes* or in high traffic areas of *turf*.

(s) *Check valves* or *anti-drain valves* are required on all *sprinkler heads* where low point drainage could occur.

(t) 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*.

(u) *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 for the landscape project specifies an alternative design or technology, as part of the *Landscape Documentation Package,* and clearly demonstrates strict adherence to the irrigation system design criteria in Section 2.5 (a)(1)(H) hereof. Prevention of *overspray* and *runoff* must be confirmed during an *irrigation audit*.

4. 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 of the landscape project 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 respective *plant factors*; or

2. The *plant factor* of the higher water using plant is used for the 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*.

(g) The irrigation design plan, at a minimum, shall contain:

1. the location and size of separate water meters for landscape;

2. the 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*;

3. *static water pressure* at the point of connection to the public water supply;

4. *flow rate* (gallons per minute), application rate (inches per hour), and design *operating pressure* (pressure per square inch) for each *station*;

5. irrigation schedule parameters necessary to program smart timers specified in the landscape design;

6. the following statement: "I have complied with the criteria of the *Water Efficient Landscape Ordinance* and applied them accordingly for the efficient use of water in the irrigation design plan;" and

7. the signature of a California-licensed *landscape professional*.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.6 Grading Design Plan

(A) For the efficient use of water, grading of a landscape project site shall be designed to minimize soil erosion, *runoff,* and water waste. Finished grading configuration of the *landscape area*, including pads, slopes, drainage, post-construction erosion control, and storm water control Best Management Practices, as applicable, shall be shown on the Landscape Plan unless this information is fully included in separate Grading Plans for the project, or unless the project is limited to replacement planting and/or irrigation to rehabilitate an existing *landscape area*.

(B) The *project applicant* shall submit a landscape grading plan that indicates finished configurations and elevations of the *landscape area* including:

(1) Height of graded slopes;

(2) Drainage patterns;

(3) Pad elevations;

(4) Finish grade; and

(5) Storm water retention improvements, if applicable.

(C) To prevent excessive erosion and *runoff*, it is highly recommended that the *project applicant*:

(1) Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable *hardscapes*;

(2) Avoid disruption of natural drainage patterns and undisturbed soil; and

(3) Avoid soil compaction in *landscape areas*.

(D) The Grading Design Plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of the *landscape professional,* as required by law.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.7 Certification of Completion

(A) Landscape project installation shall not proceed until the *Landscape Documentation Package* has been approved by the *City* and any ministerial permits required are issued.

(B) The *project applicant* shall notify the *City* at the beginning of the installation work and at intervals, as necessary, for the duration of the landscape project work to schedule all required inspections.

(C) *Certification of Completion* of the landscape project shall be obtained through a Certificate of Use and Occupancy or a *Permit* Final. The requirements for the Final Inspection and *Permit* Closure include submittal of:

(1) *A Landscape Installation Certificate of Completion* in the form included as **Appendix D** of these *Guidelines*, which shall include: (i) certification by a *landscape professional* that the *landscape project* has been installed per the approved *Landscape Documentation Package*; and (ii) the following statement: "The landscaping has been installed in substantial conformance to the design plans, and complies with the provisions of the *Water Efficient Landscape Ordinance* for the efficient use of water in the landscape."

(a) Where there have been significant changes (as deemed by the local permitting agency) made in the field during construction, these "as-built" or record drawings shall be included with the certificate

(b) A diagram of the irrigation plan showing *hydrozones* shall be kept with the irrigation controller for subsequent management purposes.

(2) Documentation of the irrigation scheduling parameters used to set the *controller*(s);

(3) An *irrigation audit* report from a local agency landscape irrigation auditor or third party *certified landscape irrigation auditor*, documentation of enrollment in regional or local water purveyor's water conservation programs, and/or documentation that the MAWA and ETWU information for the *landscape project* has been submitted to the local water purveyor, may be required at the option of the *City*.

(a) Landscape audits shall not be conducted by the *person* who designed or installed the landscape.

(b) In large projects or projects with multiple landscape installations (i.e. production home developments or *common interest developments*) an auditing rate of 1 in 7 lots or approximately 15% will satisfy this requirement.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.8 Post-Installation 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 in accordance with the local water purveyor's Water Conservation Ordinance or policies.

Operation of the irrigation system outside the normal *watering window* is allowed for auditing and system maintenance.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

2.9 Post-Installation Landscape and Irrigation Maintenance

Landscapes shall be continuously maintained to ensure water use efficiency in accordance with the approved capacity at the time of project construction and with this ordinance.

3. Provisions for Existing Landscapes

(A) Irrigation of all *landscape areas* shall be conducted in a manner conforming to the rules and requirements and shall be subject to penalties and incentives for water conservation and water waste prevention, as determined and implemented by the *local water purveyor* and as may be mutually agreed by the *City*.

(B) The *City* and/or the regional or *local water purveyor* may administer programs such as irrigation water use analyses, irrigation surveys and/or *irrigation audits*, tiered water rate structures, water budgeting by parcel, or other approaches to achieve landscape water use efficiency community-wide to a level equivalent to or less than would be achieved by applying a *MAWA* calculated with an ETAF of 0.8 to all *landscape areas* in the *City* over one acre in size.

(C) The architectural guidelines of a *common interest development*, including apartments, 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.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

4. Public Education

(A) Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management, and maintenance that save water is encouraged in the community.

(B) Model Homes. All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes as described.

(1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as *hydrozones*, irrigation equipment, and others that contribute to the overall water efficient theme. Signage shall include information about the site water use as designed per the local ordinance; specify who designed and installed the site water efficient landscape; and demonstrate low water use approaches to landscaping such as using appropriate plants, alternative water sources, or rainwater catchment systems.

(2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

[Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.]

PRESCRIPTIVE COMPLIANCE OPTION

(A) This appendix contains prescriptive requirements which may be used as a compliance option to the Ordinance.

(B) Compliance with the following items is mandatory and must be documented in 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* plan 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* plan 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 *turf* shall not be planted 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 data 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/ICC802-2014. "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.

City of Temple City

CERTIFICATION OF LANDSCAPE DESIGN

Appendix B: Certification of Landscape Design

I hereby certify that:

(1) I am a professional appropriately licensed in the State of California to provide professional landscape design services.

(2) The landscape design and water use calculations for the property located at _____

_____

(provide street address or parcel number(s)) were prepared by me or under my supervision.

(3) The total landscaped area for this project is:_____

(4) The landscape design and water use calculations for the identified property comply with the requirements of the City of Temple City Water Efficient Landscape Ordinance and the City of Temple City Guidelines for Implementation of the City of Temple City Water Efficient Landscape Ordinance.

(5) The information I have provided in this Certificate of Landscape Design is true and correct and is hereby submitted in compliance with the City of Temple City Guidelines for Implementation of the City of Temple City Water Efficient Landscape Ordinance.

_____ _____

Print Name Date

_____ _____

Signature License Number

_____

Address

_____ _____

Telephone E-mail Address

Landscape Design Professional's Stamp
(If applicable)

WATER EFFICIENT LANDSCAPE WORKSHEET

led out by the project applicant and it is a required item of the Landscape Documentation Package.

Landscape Area Sector Type (select one): [ ] Residential [ ] Non-Residential

Reference Evapotranspiration (ETo)[a]: 50.2

	Hydrozone #/Planting Description	Group #	Plant Factor[b] (PF)	Irrigation Method[c]	Irrigation Efficiency[c] (IE)	ETAF (PF/IE)	Landscape Area (sq-ft)	ETAF x Area	Estimated Total Water Use[d] (ETWU)
Regular Landscape Area									
1									
2									
3									
4									
5									
6									
						Total	***(A)***	***(B)***	
Special Landscape Area									
1						1			
2						1			
3						1			
								ETWU Total	
								MAWA	

Appendix C-2: Worksheet Equations and Compliance requirements

WORKSHEET INFORMATION & EQUATIONS

*ETWU is required to be below MAWA
*For regular landscaped areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

Estimated Total Water Use (ETWU) is the annual gallons required for the landscape

$$= (ETo) \times (0.62) \times (ETAF \times Area)$$

where, ETo = annual evapotranspiration rate in inches per year
0.62 = factor used to convert inches per year to gallons per square foot
ETAF = plant factor ÷ irrigation efficiency

Maximum Allowed Water Allowance (MAWA) is the annual gallons allowed

$$MAWA = (ETo) \times (0.62) \times [(ETAF \times LA) + ((1-ETAF) \times SLA)]$$

where, ETo = annual evapotranspiration rate in inches per year
0.62 = factor used to convert inches per year to gallons per square foot
ETAF = 0.55 or 0.45
LA = total (site wide) landscape area in square feet
SLA = total special landscape area

Average ETAF
= (ETAF x Area)/ Landscape Area (sq-ft), or *(B)/(A)*

Appendix C-3: Water Efficient Landscape Worksheet Plant and Irrigation Efficiency Factors

The following table can be used for common plant factors:

Plant Factor	PF
Very low water use plant	0.1
Low water use plant	0.2
Medium water use plant	0.5
High water use plant	0.8
Lawn	0.8
Pool, spa, or other water feature	1.0

[c] *Irrigation efficiency* is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average *irrigation efficiency* for purposes of these *Guidelines* is 0.71. The following *irrigation efficiency* may be obtained for the listed irrigation heads with an *Irrigation Management Efficiency* of 90%:

Irrigation Method	IE
Spray nozzles	71%
High efficiency spray nozzles	73%
Multi stream/Multi trajectory rotary (MSMT) nozzles	76%
Stream rotor nozzle	73%
Microspray	76%
Bubblers	77%
Drip emitter	81%
Subsurface drip	81%

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

Appendix C-4: Water Efficient Landscape Worksheet Example

A hypothetical project: a new single-family house with a total landscaped area of 2,600 square feet. The landscaping design shows that the landscaping includes a front lawn, multiple areas with water-efficient plants, and an edible garden in the rear yard. The worksheet shows the breakdowns of different areas and the calculation of ETWU for each area. The calculation shows that the ETWU will below the MAWA, and the Average ETAF is 0.50, which is below 0.55 allowed.

	Hydrozone #/Planting Description	Group #	Plant Factor[b] (PF)	Irrigation Method[c]	Irrigation Efficiency[c] (IE)	ETAF (PF/IE)	Landscape Area (sq-ft)	ETAF x Area	Estimated Total Water Use[d] (ETWU)
Regular Landscape Area									
1	Very Low water	a	0.1	dripping	0.81	0.12	500	60	1,867
2	Low water use	b	0.2	dripping	0.81	0.24	1000	240	7,470
3	Medium	c	0.5	Microspray	0.76	0.66	500	330	10,270
4	High water (lawn)	d	0.8	Spray Nozzles	0.71	1.12	500	560	17,429
5									
6									
						Total	***(A)2,500***	***(B)1,190***	***37,036***
Special Landscape Area									
1	Vegetable Garden					1	100	100	**3,112**
2						1			
3						1			
								****ETWU Total***	***37,036+3,112 =40,148***
								****MAWA***	***44,196***

*ETWU= (ETo) x (0.62) x (ETAF x Area)

*MAWA = (ETo) x (0.62) x [(ETAF x LA) + ((1-ETAF) x SLA)] **[MAWA calculation: 50.2 x .62 x (.55 x 2,500 +.45 x 100)=44,196]**

*Average ETAF = B/A **[1,190/2,500=.48 <.55 maximum allowed]**

Appendix D: Reference Evapotranspiration Table

REFERENCE EVAPOTRANSPIRATION (ET_o) TABLE

County and City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
LOS ANGELES													
Monrovia	2.2	2.3	3.8	4.3	5.5	5.9	6.9	6.4	5.1	3.2	2.5	2.0	50.2
Palmdale	2.0	2.6	4.6	6.2	7.3	8.9	9.8	9.0	6.5	4.7	2.7	2.1	66.2
Pasadena	2.1	2.7	3.7	4.7	5.1	6.0	7.1	6.7	5.6	4.2	2.6	2.0	52.3
Pearblossom	1.7	2.4	3.7	4.7	7.3	7.7	9.9	7.9	6.4	4.0	2.6	1.6	59.9
Pomona	1.7	2.0	3.4	4.5	5.0	5.8	6.5	6.4	4.7	3.5	2.3	1.7	47.5
Redondo Beach	2.2	2.4	3.3	3.8	4.5	4.7	5.4	4.8	4.4	2.8	2.4	2.0	42.6
San Fernando	2.0	2.7	3.5	4.6	5.5	5.9	7.3	6.7	5.3	3.9	2.6	2.0	52.0
Santa Clarita	2.8	2.8	4.1	5.6	6.0	6.8	7.6	7.8	5.8	5.2	3.7	3.2	61.5

* The values in this table were derived from:
1) California Irrigation Management Information System (CIMIS);
2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999; and
3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources (1987) Bulletin 1922 4) Determining Daily Reference Evapotranspiration, Publication Leaflet 21426
Cooperative Extension UC Division of Agriculture averages.

Appendix E: Certificate of Completion

LANDSCAPE INSTALLATION CERTIFICATE OF COMPLETION

I hereby certify that:

(1) I am a professional appropriately licensed in the State of California to provide professional landscape design services for:_____ _____(project name, mailing address and telephone).

(2) The landscape project for the property located at _____ _____ (provide street address or parcel number(s)) was installed by me or under my supervision.

(3) The landscaping for the identified property has been installed in substantial conformance with the approved Landscape Documentation Package and complies with the requirements of the City of Temple City Water Efficient Landscape Ordinance the City of Temple City Guidelines for Implementation of the City of Temple City Water Efficient Landscape Ordinance for the efficient use of water in the landscape.

(4) The following elements are attached hereto:

a. Irrigation scheduling parameters used to set the controller;

b. Landscape and irrigation maintenance schedule;

c. Irrigation audit report; and

d. Soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of the soil report recommendations.

(5) The site installation complies with the following:

a. The required irrigation system has been installed according to approved plans and specifications and if applicable, any prior approved irrigation system alternatives.

_____ Yes ____ No

b. Sprinklers comply with ASABE/ICC 802-2014 Landscape Irrigation Sprinkler & Emitter Standard.

_____ Yes ____ No

City of Temple City

LANDSCAPE INSTALLATION

CERTIFICATE OF COMPLETION

(6) The information I have provided in this Landscape Installation Certificate of Completion is true and correct and is hereby submitted in compliance with the City of Temple City Guidelines for Implementation of the City of Temple City Water Efficient Landscape Ordinance.

Print Name	Date
Signature	License Number
Address	
Telephone	E-mail Address

Landscape Design Professional's Stamp
(If Appropriate)

DEFINITIONS

The terms used in these Guidelines have the meaning set forth below:

"Aggregate" area pertains to production home neighborhoods, *common interest developments,* or other situations where multiple parcels are undergoing landscape development as one project, but may eventually be individually owned or maintained.

"*Backflow prevention device*" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

"*Check valve*" or "*anti-drain valve*" means 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.

"*Certified Landscape Irrigation Auditor*" means 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.

"*Certification of Design*" means the certification included as Exhibit E of these Guidelines that must be included in the *Landscape Documentation Package* pursuant to Section 2.1 of these Guidelines.

"*City*" means the *City* of Temple City or its authorized designee.

"*Common interest developments*" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351

"*Distribution Uniformity*" or "*DU*" is a measure of how uniformly an irrigation head applies water to a specific target area and theoretically ranges form zero to 100 percent.

"*Drip"* irrigation means 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.

"*Emitter*" means a *drip* irrigation emission device that delivers water slowly from the system to the soil.

"*Estimated Total Water Use*" or "" means the annual total amount of water estimated to keep plants in a healthy state. It is based on factors such as *reference evapotranspiration rate*, the size of the *landscape area*, *plant water use factors*, and the *irrigation efficiency* within each *hydrozone*.

"*Evapotranspiration adjustment factor*" or "*ETAF*" means 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 Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

"*Evapotranspiration rate*" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

"*Flow rate*" means 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.

"*Hardscapes*" means any durable material or feature (*pervious* and *non-pervious*) installed in or around a *landscape area*, such as pavements or walls. Pools and other *water features* are considered part of the *landscape area* and not considered *hardscapes* for purposes of these Guidelines.

"Graywater" means a system intreated 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 unhealthy 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 as per the Health and Safety Code (Section 17922.12). *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 ordinance standards.

"*Hydrozone*" means a portion of the *landscape area* having plants with similar water needs and typically irrigated by one *valve*/controller *station*. A *hydrozone* may be irrigated or non-irrigated.

"*Infiltration rate*" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

"*Invasive"* plants species or "*noxious*" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. *Invasive plant species* may be regulated by county agricultural agencies as *noxious species*.

"*Irrigation audit*" means 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.

"*Irrigation Management Efficiency"* or "*IME*" means the measurement used to calculate the *irrigation efficiency* of the irrigation system for a landscaped project. A 90% IME can be

achieved by using evaportranspiration controllers, soil moisture sensors, and other methods that will adjust irrigation run times to meet plant water needs.

"*Irrigation efficiency*" or "*IE*" means the measurement of the amount of water beneficially used divided by the amount of water applied to a *landscape area*. *Irrigation efficiency* is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average *irrigation efficiency* for purposes of these *Guidelines* is 0.71. Greater *irrigation efficiency* can be expected from well designed and maintained systems. The following *irrigation efficiency* may be obtained for the listed irrigation heads with an IME of 90%:

Irrigation Method	**DU_{LQ}**	**DU_{LH} ***	**EU**	**IE****
Spray nozzles	65%	79%		71%
High efficiency spray nozzles	70%	82%		73%
Multi stream/Multi trajectory rotary (MSMT) nozzles	75%	85%		76%
Stream rotor nozzle	70%	82%		73%
Microspray	75%	85%		76%
Bubblers			85%	77%
Drip emitter			90%	81%
Subsurface drip			90%	81%

*DU_{LH} = .386 + (.614)(DU_{LQ})

** IE (spray) = (DU_{LH})(IME)

** IE (drip) = Emission uniformity (EU)(IME)

"*Landscape coefficient*" (K_L) is the product of a *plant factor* multiplied by a density factor and a *microclimate* factor. The *landscape coefficient* is derived to estimate water loss from irrigated *landscape areas* and *special landscape areas*.

"*Landscape Documentation Package*" means the package of documents that a *project applicant* is required to submit to the *City* pursuant to Section 2.1 of these Guidelines.

"Landscape Installation Certificate of Completion" means the certificate included as Exhibit F of these *Guidelines* that must be submitted to the *City* pursuant to Section 2.7(a)(1) of hereof.

"*Landscape professional*" means a licensed *landscape architect*, licensed landscape contractor, or any other *person* authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code.

"*Landscape area*" means all the planting areas, *turf* areas, and *water features* in a landscape design plan subject to the *Maximum Applied Water Allowance* and *Estimated Applied Water Use*

calculations. 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).

"*Lateral line*" means the water delivery pipeline that supplies water to the *emitters* or sprinklers from the *valve*.

"*Low volume irrigation*" means 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.

"Low volume overhead irrigation" means aboveground irrigation heads with an upper flow limit of 0.5 GPM.

"*Main line*" means the pressurized pipeline that delivers water from the water source to the *valve* or outlet.

"*Manual Isolation Valve*" means a valve such as a gate valve, ball valve, or butterfly valve installed downstream of the point of connection of the water supply to shutdown water flow through mainline piping for routine maintenance and emergency repair.

"*Master shut-off valve*" an electronic valve such as a solenoid valve installed as close as possible to the point of connection and is used in conjunction with a flow sensor and flow monitoring controller technology to automatically shutdown system wide water flow in the event of high flow conditions such as mainline pipe break.

"*Maximum Applied Water Allowance*" or "*MAWA*" means the upper limit of annual applied water for the established *landscape area,* as specified in Section 2.2 of these *Guidelines*. It is based upon the area's *reference evapotranspiration*, the *ETAF*, and the size of the *landscape area*. The *Estimated Applied Water Use* shall not exceed the *Maximum Applied Water Allowance*.

"M*icroclimate*" means 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.

"*Mulch*" means any organic material such as leaves, bark, straw or 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.

"*Non-pervious*" means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil.

"*Operating pressure*" means the pressure at which the parts of an irrigation system of sprinklers are designed to operate at by the manufacturer

"*Overspray*" means the irrigation water which is delivered beyond the target area.

"*Person*" means any natural person, firm, joint venture, joint stock company, partnership, public or private association, club, company, corporation, business trust, organization, public or private agency, government agency or institution, school district, college, university, any other user of water provided by the *City* or the *local water purveyor*, or the manager, lessee, agent, servant, officer, or employee of any of them or any other entity which is recognized by law as the subject of rights or duties.

"*Pervious*" means 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*" is a factor, when multiplied by *ETo*, that estimates the amount of water needed by plants. For purposes of this *Water Efficient Landscape Ordinance*, the *plant factor* range for low water use plants is 0 to 0.3; the *plant factor* range for moderate water use plants is 0.4 to 0.6; and the *plant factor* range for high water use plants is 0.7 to 1.0. *Plant factors* cited in these *Guidelines* are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."
"*Precipitation rate*" means the rate of application of water measured in inches per hour.

"*Project applicant*" means the *person* submitting a *Landscape Documentation Package* required under Section 2.1 to request a permit, plan check, or design review from the local agency. A *project applicant* may be the property owner or his or her designee.

"*Property owner*" or "*owner*" means the record owner of real property as shown on the most recently issued equalized assessment roll.

"*Reference evapotranspiration*" or "*ETo*" means a standard measurement of environmental parameters which affect the water use of plants. *ETo* is given expressed in inches per day, month, or year as represented in Appendix C of these Guidelines, 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*s.

"*Recycled water*" or "*reclaimed water*" means 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.

"*Runoff*" means 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.

"*Special Landscape Areas*" or "*SLA*" means an area of the landscape dedicated solely to edible plants such as orchards and vegetable gardens, areas irrigated with *recycled water*, *water features* using *recycled water*, and areas dedicated to active play such as community pools and spas, parks, sports fields, golf courses, and where *turf* provides a playing surface.

"*Sprinkler head*" means a device which delivers water through a nozzle.

"*Static water pressure*" means the pipeline or municipal water supply pressure when water is not flowing.

"*Station*" means an area served by one *valve* or by a set of *valves* that operate simultaneously.

"*Swing joint*" means an irrigation component that provides a leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

"*Turf*" means 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*" means a device used to control the flow of water in an irrigation system.

"*Water Efficient Landscape Ordinance*" means Ordinance No. _____, adopted by the *City* Council on _____, 2009, and codified in the Municipal Code in [chapter/title/division/sections _____].

"*Water Efficient Landscape Worksheets*" means the worksheets required to be completed pursuant to Section 2.2 of these *Guidelines* and which are included in Appendix B hereof.

"*Water feature*" means 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, habitat protection, or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not *water features* and, therefore, are not subject to the water budget calculation.

"*Watering window*" means the time of day irrigation is allowed.

"*WUCOLS*" means the Water Use Classification of Landscape published by the University of California Cooperative Extension, the Department of Water Resources, and the Bureau of Reclamation, 2000. *www.owue.water.ca.gov/docs/wucols00*

Appendix G: Irrigation Plan Checklist

This is a voluntary compliance tool template developed by the Irrigation Association.

IRRIGATION PLAN CHECKLIST

Please complete the following checklist by checking all appropriate categories under APPLICANT column, indicating compliance with these content requirements. All submitted plans shall contain the following information:

LANDSCAPE PLAN NUMBER: _____

NAME OF PROJECT: _____

Applicant			Planner
[ ]	1.	Prevailing winds	[ ]
[ ]	2.	Slope aspect and degree of slope	[ ]
[ ]	3.	Soil type and infiltration rate	[ ]
[ ]	4.	Vegetation type	[ ]
[ ]	5.	Microclimates	[ ]
[ ]	6.	Expansive or hazardous soil conditions	[ ]
[ ]	7.	Water harvesting potential	[ ]
[ ]	8.	Available water supply, including non-potable and recycled water	[ ]
All pertinent system information is indicated, including:			
[ ]	9.	Irrigation zones substantially corresponding to hydrozones on the landscape plan and labeled by precipitation rates and method of application	[ ]
[ ]	10.	Water meters	[ ]
[ ]	11.	Tap-in location	[ ]
[ ]	12.	Static water pressure at the point of connection	[ ]
[ ]	13.	System controller	[ ]
[ ]	14.	Rain sensor/shut-off device	[ ]
[ ]	15.	Backflow preventers	[ ]
[ ]	16.	Shut-off valves and zone control valves	[ ]
[ ]	17.	Main line and lateral piping	[ ]
[ ]	18.	Sprinkler heads	[ ]
[ ]	19.	Bubblers and drip irrigation tubing runs	[ ]
[ ]	20.	Type and size of main irrigation system components	[ ]
[ ]	21.	Total required operating pressure for each control valve/zone	[ ]
[ ]	22.	Graphic depiction of the locations of irrigation system components	[ ]
[ ]	23.	Total required operating pressure for each control valve/zone	[ ]
[ ]	24.	Any supplemental stormwater and/or runoff harvesting	[ ]
System design is in conformance with the following standards:			
[ ]	25.	Certification of Professional Qualifications, attached	[ ]
[ ]	26.	Pedestrian surfaces located on plan	[ ]
[ ]	27.	Equipment installed flush with grade for safety	[ ]
[ ]	28.	Compliance with local codes	[ ]
[ ]	29.	Overspray onto impervious areas minimized	[ ]