





**MODEL EFFICIENT LANDSCAPE ORDINANCE  
LANDSCAPE DOCUMENTATION PACKAGE & CERTIFICATE OF COMPLETION  
PACKAGE**

The City of Vernon has adopted by Reference, per Resolution No. 1161, the California Department of Water Resources Model Water Efficient Landscape Ordinance (Model Ordinance). The purpose of the Model Ordinance is to promote water conservation by reducing water used for irrigation activities. This Ordinance applies to new construction and rehabilitated landscapes for public and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review.

In order to receive a permit for the irrigation system this documentation Package, consisting of the following six (6) elements must be completed by the applicant in accordance with Resolution No. 1161. Please refer to the encapsulated sections below for detailed compliance instructions:

1. Project Application;
2. Water Efficient Landscape Worksheet (See Section 1);
3. Soil Management Report (See Section 2);
4. Landscape Design Plan (See Section 3);
5. Irrigation Design Plan (See Section 4); and
6. Grading Design Plan (See Section 5).

**Section 1 Water Efficient Landscape Worksheet.**

(a) A project applicant shall complete the Water Efficient Landscape Worksheet which contains two sections (see sample worksheet in Appendix A):

(1) A hydrozone information table (see Appendix A, Section A) for the landscape project. The City of Vernon is located in WUCOLS Region No. 3; and

(2) A water budget calculation (see Appendix B, Section B) for the landscape project. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, The ET value for Vernon is 50.1.

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

(1) The plant factor used shall be from WUCOLS. The plant factor ranges from 0 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.

(2) 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.

(3) All Special Landscape Areas shall be identified and their water use calculated as described below.

(4) ETAF for Special Landscape Areas shall not exceed 1.0.

(c) Maximum Applied Water Allowance

The Maximum Applied Water Allowance shall be calculated using the equation:

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

In this example MAWA calculation, the landscape project in Vernon, CA has an ETo value of 50.1 inches and a total landscape area of 50,000 square feet. Within the 50,000 square foot project, there is now a 2,000 square foot area planted with edible plants. This 2,000 square foot area is considered to be a Special Landscape Area.

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

MAWA = Maximum Applied Water Allowance (gallons per year)

ETo = Reference Evapotranspiration (inches per year)

0.62 = Conversion Factor (to gallons)

0.7 = ET Adjustment Factor (ETAF)

LA = Landscape Area including SLA (square feet)

0.3 = Additional Water Allowance for SLA

SLA = Special Landscape Area (square feet)

$$\text{MAWA} = (50.1 \text{ inches}) (0.62) [(0.7 \times 50,000 \text{ square feet}) + (0.3 \times 2,000 \text{ square feet})]$$

$$= 31.06 \times [35,000 + 600] \text{ gallons per year}$$

$$= 31.06 \times 35,600 \text{ gallons per year}$$

$$= 1,105,736 \text{ gallons per year or } 1,478 \text{ hundred-cubic-feet per year}$$

(d) Estimated Total Water Use.

The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

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

Where:

ETWU = Estimated Total Water Use per year (gallons)

ETo = Reference Evapotranspiration (inches)

PF = Plant Factor from WUCOLS (see Section 491)

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

Example ETWU calculation: total landscape area is 50,000 square feet, 2,000 square feet of which is planted with edible plants. The edible plant area is considered a Special Landscape Area (SLA). The reference evapotranspiration value is 50.1 inches per year. The plant type, plant factor, and hydrozone area are shown in the table below.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	9,000	6,300
3	Medium	0.5	15,000	7,500
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	23,500
6	SLA	1.0	2,000	2,000

\*Plant Factor from WUCOLS

$$ETWU = (50.1)(0.62) \left( \frac{23,500}{0.71} + 2,000 \right)$$

$$= (31.06) (33,099 + 2,000)$$

$$= 1,090,174 \text{ gallons per year}$$

Compare ETWU with MAWA. For this example:

$$MAWA = (50.1) (0.62) [(0.7 \times 50,000) + (0.3 \times 2,000)]$$

$$= 31.06 \times [35,000 + 600]$$

$$= 31.06 \times 35,600$$

$$= 1,105,736 \text{ gallons per year}$$

The ETWU (1,090,174 gallons per year) is less than MAWA (1,105,736 gallons per year). For this example, the water budget complies with the MAWA.

## **Section 2 Soil Management Report.**

(a) 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 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:

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) 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 local agency 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 local agency with Certificate of Completion.

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

### **Section 3 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. 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. To encourage the efficient use of water, the following is highly recommended:

1. Protection and preservation of native species and natural vegetation;
2. Selection of water-conserving plant and turf species;
3. Selection of plants based on disease and pest resistance;
4. Selection of trees based on applicable local tree ordinances or tree shading guidelines; and
5. Selection of plants from local and regional landscape program plant lists.

(B) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified below in Sections 4(a) and Section 4(2)(D):

Section 4(a) 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.

Section 4(2)(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.

(C) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:

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]; 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) 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.

(F) The use of invasive and/or noxious plant species 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 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) Mulch and Amendments

(A) A minimum two inch (2") 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.

(B) Stabilizing mulching products shall be used on slopes.

(C) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.

(D) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).

(b) 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 of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:

(A) Infiltration beds, swales, and basins that allow water to collect and soak into the ground;

(B) Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and

(C) Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.

(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 ordinance and applied them for the efficient use of water in the landscape design plan"; and

(13) 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.)

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

#### **Section 4 Irrigation Design Plan.**

(a) 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) Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.

(B) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.

(C) The irrigation system shall be designed 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 local agency code (i.e., public health) for additional backflow prevention requirements.

(G) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.

(H) 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.

(I) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.

(J) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.

(K) The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in the Water Efficient Landscape Worksheet.

(L) 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.

(M) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.

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

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

(P) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

(Q) Check valves or anti-drain valves are required for all irrigation systems.

(R) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.

(S) 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 4 (a)(1)(H). Prevention of overspray and runoff must be confirmed during the irrigation audit.

(T) Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation 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.

(D) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

1. 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 A Section A). This table can also assist with the irrigation audit and programming the controller.

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

(1) Location and size of separate water meters for landscape;

(2) 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) Recycled water irrigation systems as specified in Section 11;

(6) The following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and

(7) 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.)

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

### **Section 5 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 local agency 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 ordinance 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.

### **Section 6 Certificate of Completion.**

(a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:

(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;

(3) Irrigation scheduling parameters used to set the controller (see Section 7);

(4) Landscape and irrigation maintenance schedule (see Section 8);

(5) Irrigation audit report (see Section 9); and

(6) Soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 2).

(b) The project applicant shall:

(1) Submit the signed Certificate of Completion to the local agency 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 local agency 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 local agency shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

### **Section 7 Irrigation Scheduling.**

(a) 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 5:00 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.

**Section 8 Landscape and Irrigation Maintenance Schedule.**

- (a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
- (b) A regular maintenance schedule shall include, but not be limited to, routine inspection; 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 and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- (c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.
- (d) A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

**Section 9 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.**

- (a) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
- (b) For new construction and rehabilitated landscape projects installed after January 1, 2010

(1) The project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency 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;

(2) The local agency 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.

### **Section 10 Irrigation Efficiency.**

(a) For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

### **Section 11 Recycled Water.**

(a) The installation of recycled water irrigation systems shall allow for the current and future use of recycled water, unless a written exemption has been granted as described in Section 492.14(b).

(b) Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the local water purveyor stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.

(c) All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.

(d) Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0.

### **Section 12 Stormwater Management.**

(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 retention and infiltration are encouraged.

(b) Project applicants shall refer to the local agency or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.

(c) Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.

**Appendix A – Sample Water Efficient Landscape Worksheet.**

**WATER EFFICIENT LANDSCAPE WORKSHEET**

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.

Please complete all sections (A and B) of the worksheet.

**SECTION A. HYDROZONE INFORMATION TABLE**

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Landscape Area
<b>Total</b>			<b>100%</b>	

## APPENDIX B - SECTION B. WATER BUDGET CALCULATIONS

### Section B1. Maximum Applied Water Allowance (MAWA)

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

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

where:

MAWA = Maximum Applied Water Allowance (gallons per year)

ETo = Reference Evapotranspiration = 50.1 (inches per year)

0.7 = ET Adjustment Factor (ETAF)

LA = Landscaped Area includes Special Landscape Area (square feet)

0.62 = Conversion factor (to gallons per square foot)

SLA = Portion of the landscape area identified as Special Landscape Area (square feet)

0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = \_\_\_\_\_ gallons per year

Show calculations.

**Effective Precipitation (Eppt)**

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

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

**Maximum Applied Water Allowance = \_\_\_\_\_ gallons per year**

Show calculations.

**Section B2. Estimated Total Water Use (ETWU)**

The project's Estimated Total Water Use is calculated using the following formula:

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

where:

ETWU = Estimated total water use per year (gallons per year)

ETo = Reference Evapotranspiration (inches per year)

PF = Plant Factor from WUCOLS (see Definitions)

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor (to gallons per square foot)

IE = Irrigation Efficiency (minimum 0.71)

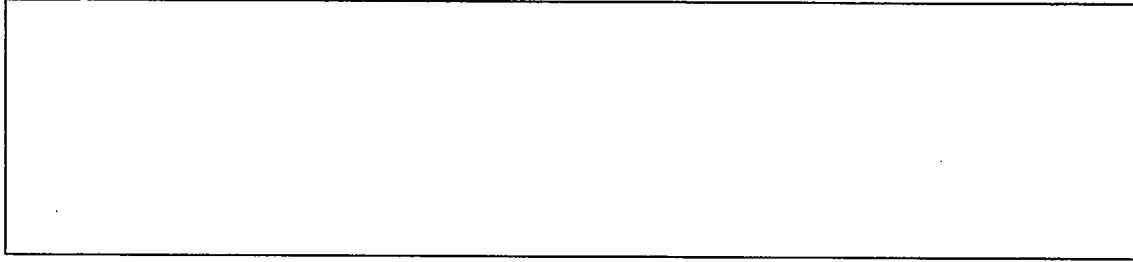
**Hydrozone Table for Calculating ETWU**

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

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

Estimated Total Water Use = \_\_\_\_\_ gallons

Show calculations.

A large, empty rectangular box with a thin black border, intended for the student to show their calculations. The box is horizontally oriented and occupies a significant portion of the upper half of the page.

**Appendix C**

**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.	
Company		Street Address	
Title		Email 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.	
Company	Street Address	
Title	Email 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."

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Property Owner Signature Date

**Please answer the questions below:**

1. Date the Landscape Documentation Package was submitted to the local agency \_\_\_\_\_
2. Date the Landscape Documentation Package was approved by the local agency \_\_\_\_\_
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 ordinance 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 ordinance Section 492.10.

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

Attach schedule of Landscape and Irrigation Maintenance per ordinance Section 492.11.

**PART 5. LANDSCAPE IRRIGATION AUDIT REPORT**

Attach Landscape Irrigation Audit Report per ordinance Section 492.12.

**PART 6. SOIL MANAGEMENT REPORT**

Attach soil analysis report, if not previously submitted with the Landscape Documentation Package per ordinance Section 492.5. Attach documentation verifying implementation of recommendations from soil analysis report per ordinance Section 492.5.