



# Water Efficient Landscape Worksheet

Project Name \_\_\_\_\_

**Maximum Applied Water Allowance (MAWA)** (gallons per year)

Calculate the project's Maximum Applied Water Allowance using the following equation:

$$MAWA = (ET_o \times 0.62) (0.7 \times LA + 0.3 \times SLA)$$

where:

ET<sub>o</sub> = Reference Evapotranspiration (40.8 inches per year for Healdsburg)

0.62 = Conversion factor (to gallons per square foot)

0.7 = ET Adjustment Factor

LA = Total Landscape Area, including any Special Landscape Area (square feet)

SLA = Special Landscape Area (square feet)

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

Show calculations below.

**MAWA** = (40.8 x 0.62) (0.7 x \_\_\_\_\_ + 0.3 x \_\_\_\_\_)  
 25.3 X ( \_\_\_\_\_ + \_\_\_\_\_ ) = \_\_\_\_\_ gallons per year  
**Maximum Applied Water Allowance** = \_\_\_\_\_ gallons per year

### Water Use by Hydrozone Table

Hydrozone ID	Plant Type*	Plant Factor (PF)**	Landscaped Area	PF X Landscaped Area
<b>Totals</b>			sq. ft.	sq. ft.

**\*Plant Types**

- CST Cool Season Turf
- WST Warm Season Turf
- HW High Water Use Plants
- MW Moderate Water Use Plants
- LW Low Water Use Plants

All water features are High Water Use  
Temporarily irrigated areas are Low Water Use

\*\*From *Water Use Classification of Landscape Species* (WUCOLS)

**Hydrozone Map**

Attach a hydrozone map to this worksheet. Hydrozones shall be designated by number, letter or other designation.

**Estimated Total Water Use (ETWU) (gallons per year)**

Calculate the project's Estimated Total Water Use using the following equation:

$$\text{ETWU} = (\text{ETo} \times 0.62) \left[ \frac{\sum \text{WU}}{\text{IE}} + \text{SLA} \right]$$

where:

ETo = Reference Evapotranspiration (40.8 inches per year in Healdsburg)

0.62 = Conversion factor (to gallons per square foot)

$\sum \text{WU}$  = Total water use from Water Use by Hydrozone Table (above)

IE = Irrigation efficiency from table below (minimum 0.71)

% of total landscape irrigated with drip	Irrigation efficiency factor
0 - 25%	0.71
26 - 50%	0.75
51 - 75%	0.80
76 - 100%	0.85

SLA = Special Landscape Area (square feet)

Show calculations below.

$\text{ETWU} = (40.8 \times 0.62) \left[ \frac{\underline{\hspace{2cm}}}{\underline{\hspace{2cm}}} + \underline{\hspace{1cm}} \right] = \underline{\hspace{3cm}} \text{ gallons per year}$ $\text{Estimated Total Water Use} = \underline{\hspace{3cm}} \text{ gallons per year}$
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**Calculations must demonstrate that the project's ETWU of \_\_\_\_\_ gallons per year is less than its MAWA of \_\_\_\_\_ gallons per year**

## Definitions

“Estimated Total Water Use” means the total irrigation water projected to be used for a project’s irrigated landscape area in gallons per day. The Estimated Total Water Use shall not exceed the project’s Maximum Applied Water Allowance.

“ET adjustment factor” means a factor of 0.7, 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. A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ET Adjustment Factor, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor  $(0.7) = (0.5/0.71)$ . ET adjustment Factor for a Special Landscape Area should not exceed 1.0.

“Hydrozone” means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

“Irrigation efficiency” means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum irrigation efficiency for purposes of these requirements is 0.71.

“Landscape area” means all of the planting, turf areas and water features in a Landscape Design Plan subject to the Maximum Applied Water Allowance (MAWA) calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

“Maximum Applied Water Allowance” means the allowable upper limit of annual applied water for the established landscaped area. It is based upon the geographic area’s reference evapotranspiration, the ET Adjustment Factor and the size of the landscape area. Special Landscape Areas are subject to the MAWA with an ET adjustment factor not to exceed 1.0.

“Plant factor” or “plant water use factor” means a factor that, when multiplied by reference evapotranspiration, estimates the amount of water used by plants. Plant factors are derived from WUCOLS (Water Use Classification of Landscape Species).

“Reference evapotranspiration” or “ET<sub>o</sub>” means a standard measurement of environmental parameters that affect the water use of plants. ET<sub>o</sub> is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool season turf that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowances so that regional differences in climate can be accommodated.

“Special landscape area” means an area dedicated to edible plants, an area irrigated with recycled water or an area where turf is dedicated to active recreation, such as parks, sports fields and golf courses.

“Turf” means a groundcover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, perennial ryegrass, red fescue and tall fescue are common cool-season grasses. Bermuda grass, Kikuyu grass, seashore paspalum, St. Augustine grass, Zoysia grass, and Buffalo grass are common warm-season grasses.

“WUCOLS” means the latest edition of the publication entitled “Water Use Classification of Landscape Species” by the U.C. Cooperative Extension.