

### WaterSense New Home Specification: Water Budget Tool (V 1.02)

This water budget tool shall be used to determine if the designed landscape meets Criteria 4.1.1 of the specification. Please refer to the WaterSense Water Budget Approach for additional information.

Your Name:   
Builder Name:   
Lot Number/Street Address:   
City, State, Zip Code:



Peak Watering Month:   
Obtain from Water Budget Data Finder at [www.epa.gov/watersense/nhspeccs/wb\\_data\\_finder.html](http://www.epa.gov/watersense/nhspeccs/wb_data_finder.html)

Is an irrigation system being installed on this site?

### This worksheet determines the baseline and the landscape water allowance (LWA) for a site based on its peak watering month.

The baseline is the amount of water required by the site during the peak watering month if watered at 100 percent of reference evapotranspiration (ET<sub>o</sub>). The following formula is used to calculate the baseline:

$$Baseline = ET_o \times A \times C_u$$

Where:

- ET<sub>o</sub> = Local reference evapotranspiration (inches/month)
- A = Landscaped area (square feet)
- C<sub>u</sub> = Conversion factor (0.6233 for results in gallons/month)

The LWA is the water allotment for the site. The following formula is used to calculate the LWA:

$$LWA = 0.70 \times Baseline$$

Where:

- LWA = Landscape water allowance (gallons/month)
- Baseline = ET<sub>o</sub> x landscaped area x 0.6233

To calculate the Baseline and LWA for a site, enter the designed landscaped area and average monthly reference evapotranspiration for the site's peak watering month. (Enter data in white cells only.)

#### STEP 1A - ENTER THE LANDSCAPED AREA (A)

Area of the designed landscape (square feet)

#### STEP 1B - ENTER THE AVERAGE MONTHLY REFERENCE EVAPOTRANSPIRATION (ET<sub>o</sub>)

Average monthly reference ET (inches/month) for the site's peak watering month

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#### OUTPUT - BASELINE FOR THE SITE

Monthly baseline (gallons/month) based on the site's peak watering month

#### OUTPUT - WATER ALLOWANCE FOR THE SITE

Monthly landscape water allowance (gallons/month) based on the site's peak watering month

Next Step: Click on the next tab labeled *Part 2 - LWR* to calculate the landscape water requirement.

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 Peak Watering Month:   
 Is an irrigation system being installed on this site?



**This worksheet determines the monthly landscape water requirement (LWR) for a site based on its peak watering month.**

The monthly LWR is the water requirement specific to the designed landscape. The sum of the LWRs for each hydrozone equals the site LWR. The following formula is used to calculate the LWR for each hydrozone:

$$LWR_H = \frac{1}{DU_{LQ}} \times [(ET_o \times K_L) - R_a] \times A \times C_u$$

Where:  
 LWR<sub>H</sub> = Landscape water requirement for the hydrozone (gallons/month)  
 DU<sub>LQ</sub> = Lower quarter distribution uniformity  
 ET<sub>o</sub> = Local reference evapotranspiration (inches/month)  
 K<sub>L</sub> = Landscape coefficient for the type of plant in that hydrozone (dimensionless)  
 R<sub>a</sub> = Allowable rainfall, designated by WaterSense as 25% of average peak monthly rainfall (R)  
 A = Area of the hydrozone (square feet)  
 C<sub>u</sub> = Conversion factor (0.6233 for results in gallons/month)

To calculate the LWR for the site, enter the information requested below for the site's peak watering month. (Enter data in white cells only.)

**STEP 2A - ENTER THE AVERAGE MONTHLY RAINFALL (R) AT THE SITE FOR THE PEAK WATERING MONTH IDENTIFIED IN PART 1**

**3.26** Average monthly rainfall (inches/month) for the site's peak watering month

Obtain from Water Budget Data Finder at [www.epa.gov/watersense/nhspecc/wb\\_data\\_finder.html](http://www.epa.gov/watersense/nhspecc/wb_data_finder.html)

**STEP 2B - COMPLETE TABLE 1 BELOW (enter data in white cells only)**

Enter the area of the hydrozone (square feet). The total area must equal the landscaped area entered in Step 1A.

Choose the plant type from the dropdown list (source data is displayed in Table 2).

Choose the irrigation type from the dropdown list (source data is displayed in Table 3; guidance is displayed in Table 4 and Table 5).

**Table 1. Landscape Water Requirement**

Zone	Hydrozone/Landscape Feature Area (sq. ft.)	Plant Type or Landscape Feature	Landscape Coefficient (K <sub>L</sub> )	Irrigation Type	Distribution Uniformity (DU <sub>LQ</sub> )	LWR <sub>H</sub> (gal/month)
1	1,573	Permeable Hardscape		No Irrigation		-
2	4,283	Groundcover - Medium water requirement	0.5	Drip - Press Comp	90%	6,526
3	982	Trees - Medium water requirement	0.5	Drip - Press Comp	90%	1,496
4	1,323	Permeable Hardscape		No Irrigation		-
5	812	Groundcover - Medium water requirement	0.5	Drip - Press Comp	90%	1,237
6	2,355	Turfgrass - Medium water requirement	0.7	Fixed Spray	65%	7,692
7	2,734	Permeable Hardscape		No Irrigation		-
8	1,211	Turfgrass - Medium water requirement	0.7	Fixed Spray	65%	3,955
9	2,000	Turfgrass - Medium water requirement	0.7	Fixed Spray	65%	6,533
10	2,323	Turfgrass - Medium water requirement	0.7	Fixed Spray	65%	7,588
11	331	Permeable Hardscape		No Irrigation		-
12						-
13						-
14						-
15						-
<b>Total Area =</b>	<b>19,927</b>	<b>Landscape Water Requirement for the Site (gal/month)</b>				<b>35,027</b>

**Table 2. Plant Type or Landscape Feature and Associated Landscape Coefficient**

Plant Type or Landscape Feature	K <sub>L</sub>		
	Low	Medium	High
Trees	0.2	0.5	0.9
Shrubs	0.2	0.5	0.7
Groundcover	0.2	0.5	0.7
Turfgrass	0.6	0.7	0.8
Pool, Spa, or Water Feature	0.8		
Permeable Hardscape	0		
Nonvegetated Softscape	0		

Source: Based on LEED for Homes Rating System 2008.

**Table 3. Distribution Uniformity**

Irrigation Type	DU <sub>LQ</sub> or EU*
Drip - Standard	70%
Drip - Press Comp	90%
Fixed Spray	65%
Micro Spray	70%
Rotor	70%
No Irrigation	NA

\*Lower quarter distribution uniformity (DU<sub>LQ</sub>) applies to sprinkler zones and emission uniformity (EU) applies to drip/microirrigation zones. Source: (The Irrigation Association, October 2001) in Landscape Irrigation Scheduling and Water Management, IA 2005.

**Table 4. Appropriate Irrigation Types - Landscaped Areas with Irrigation Systems**

IF THE PLANT TYPE IS:	THEN THE IRRIGATION TYPE CAN BE:			
	Drip - Standard	Drip - Press Comp	Fixed Spray	Micro Spray*
Trees	x	x		x
Shrubs	x	x		x
Groundcover	x	x		x
Turfgrass	x	x	x	x

\* Micro spray may only be used on vegetation other than turfgrass if it meets the definition of microirrigation system, which according to the WaterSense New Home Specification is: "The frequent application of small quantities of water on or below the soil surface as drops, tiny streams or miniature spray through emitters or applicators placed along a water delivery line. Microirrigation encompasses a number of methods or concepts, such as bubbler, drip, trickle, mist or spray, and subsurface irrigation. For the purposes of this specification, microirrigation includes emission devices that have flow rates less than 30 gallons per hour."

**Table 5. Appropriate Irrigation Types - Landscaped Areas without Irrigation Systems**

IF THE PLANT TYPE OR LANDSCAPE FEATURE IS:	THEN THE IRRIGATION TYPE SHALL BE:		
	Drip - Standard	Fixed Spray	No Irrigation
Trees, Shrubs, or Groundcover with Low Water Requirements (K <sub>L</sub> = 0.2)	x		
Trees, Shrubs, or Groundcover with Medium or High Water Requirements (K <sub>L</sub> > 0.2)		x	
Turfgrass with Low, Medium, or High Water Requirements (K <sub>L</sub> > 0.2)		x	
Pool, Spa, or Water Feature		x	
Permeable Hardscape			x
Nonvegetated Softscape			x

\*Please see additional information in the WaterSense Water Budget Approach for landscapes installed without irrigation systems.

**OUTPUT - WATER REQUIREMENT FOR THE SITE**

**35,027** Monthly landscape water requirement (gallons/month) based on the site's peak watering month

Next Step: Click on the next tab labeled **Part 3 - Results** to view the results.

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Is an irrigation system being installed on this site?

### This worksheet determines if the designed landscape meets the water budget.

If the landscape water requirement is LESS than the landscape water allowance, then the water budget criterion is met.

If the landscape water requirement is GREATER than the landscape water allowance, then the landscape and/or irrigation system needs to be redesigned to use less water.

#### STEP 3A - REVIEW THE LWA AND LWR FROM PART 1 AND PART 2

LWA  (gallons/month) LWR  (gallons/month)

#### STEP 3B - REVIEW THE TOTAL AREA OF TURFGRASS\* IN THE DESIGNED LANDSCAPE FROM STEP 2B

The designed landscape contains  square feet of turfgrass.\* This is  of the landscaped area.

\*This includes the area of any pools, spas, and/or water features, designated by WaterSense to be counted as turfgrass.

#### OUTPUT - DOES THE DESIGNED LANDSCAPE MEET THE WATER BUDGET?

If YES, then the water budget criterion is met.

If NO, then the landscape and/or irrigation system needs to be redesigned to use less water.

The designed landscape water requirement is a  reduction in water use from the baseline calculated in Part 1.