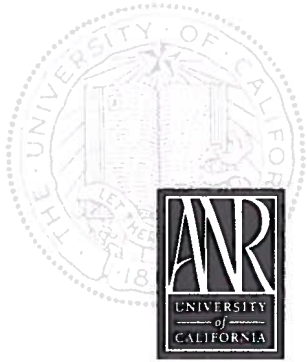


# **EXHIBIT 3**



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# Lawn Watering Guide for California

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The techniques described in this publication will help homeowners set up timed irrigation controllers for home lawns. The simple procedure involves identifying your home's climatic region, the type of turfgrass you have, and the output of your irrigation system. A set of tables provides a general guideline for scheduling lawn irrigation based on average weather data and turfgrass growth characteristics. Environmental conditions will vary somewhat from year to year and from location to location within a region, so your irrigation controller will continue to need minor adjustments from time to time in order to deliver optimum results. Ideally, you should plan to re-set your automatic irrigation system monthly during the growing seasons in response to changes in the weather.

## HOW TO USE THE LAWN WATERING GUIDE

### Step 1. Determine what type of lawn you have.

- Warm-season grasses include hybrid bermudagrass, common bermudagrass, zoysiagrass, St. Augustinegrass, and kikuyugrass. Dichondra is a broadleaf groundcover with water requirements similar to those of warm-season turfgrass.
- Cool-season grasses include tall fescue, Kentucky bluegrass, annual and perennial ryegrass, and bentgrass.

### Step 2. Determine the output of your sprinklers.

- Set out six or more straight-sided containers of the same type, spaced evenly on your lawn. Empty tuna cans, cat food cans, or coffee mugs work well. Run the sprinklers for 20 minutes and use a ruler to measure (in inches) the depth of water in each can. To determine the average depth of water applied to the lawn, total the water depths for all of the containers and divide the total amount by the number of containers you used.
- Multiply the average depth by three to determine how many inches of water your sprinkler system applies per hour.

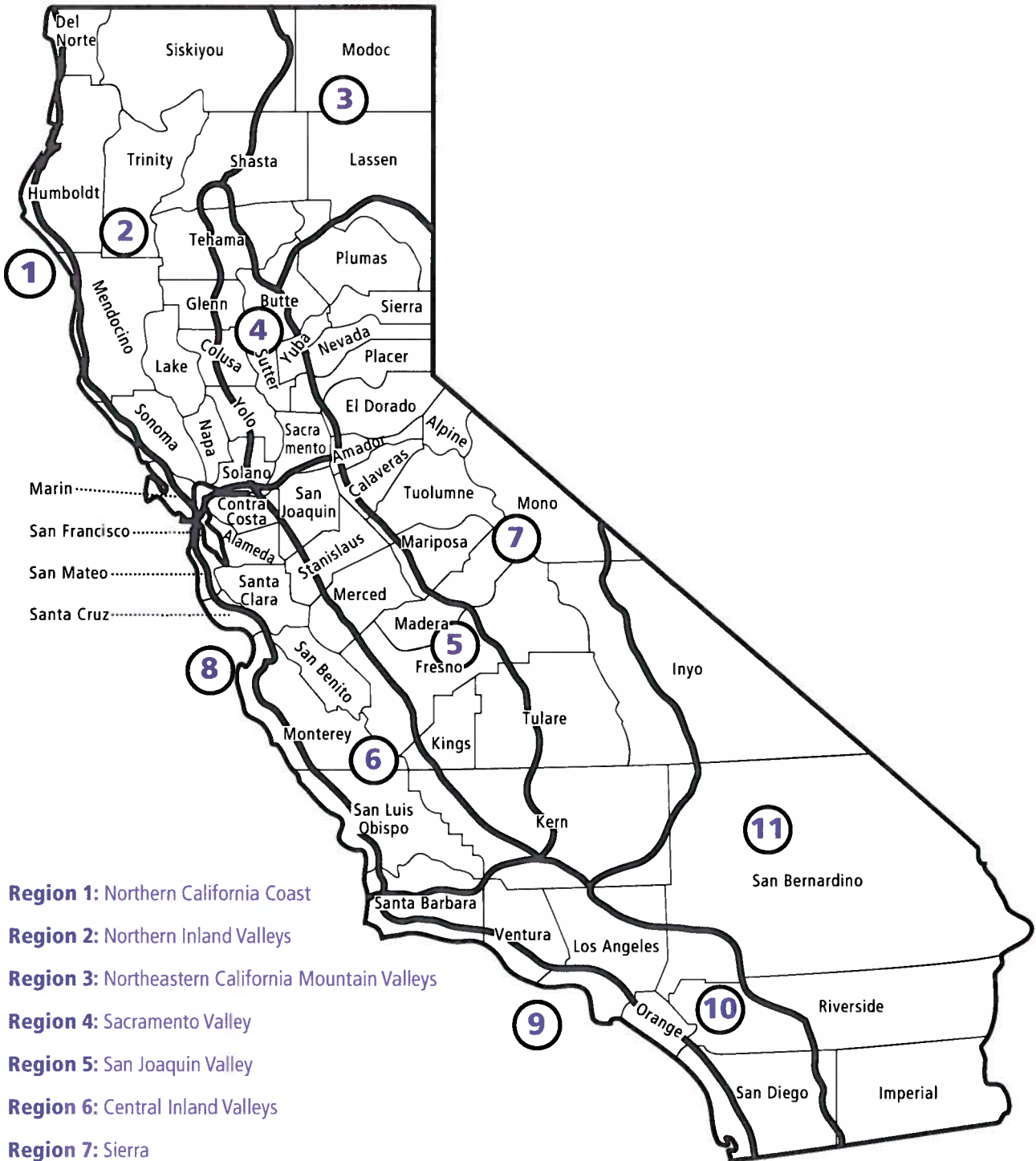
Sample calculation:

Can #1	1/2 inch (0.500 inch)
Can #2	5/8 inch (0.625 inch)
Can #3	1/2 inch (0.500 inch)
Can #4	3/8 inch (0.375 inch)
Can #5	1/2 inch (0.500 inch)
Can #6	3/8 inch (0.375 inch)
TOTAL FOR 6 CANS	2 7/8 inches (2.875 inches)
2.875 inches = 0.479 inch/can (average depth per can)	
6 cans	
0.479 inch x 3 = 1.437 inches (nearly 1 1/2 inches) per hour	

### Step 3. Determine how many minutes you need to water your lawn each week.

- Locate your geographic region on the [map](#) in this publication and then find the table that matches that region. Identify your predominant lawn type (warm-season or cool-season) and the current month on the table, and match that information to the sprinkler output that you calculated in Step 2. The resulting value is the total number of minutes that you should run your sprinklers per week to provide adequate irrigation for your lawn during the current month.
- Deeper, less frequent irrigations are best for most lawns as they promote deep root growth. If you notice excessive runoff or brown spots in the lawn with once-a-week watering, however, or if your controller can't accommodate such large blocks of time, divide the total minutes per week by 2, 3, or 4 and spread the weekly water application over the week. Desert areas, slopes, or areas with shallow soils usually need several shorter watering times instead of a single weekly irrigation. Cool-season grasses have shallow roots, and often require more frequent irrigations than warm-season grasses.
- If brown spots continue to occur despite more frequent irrigations, you may need to check your sprinkler system's coverage for uniformity. Look for and replace broken, clogged, or malfunctioning sprinkler heads that deprive lawn areas of sufficient water. After you upgrade, repair, or significantly change your system, you will need to repeat Steps 2 and 3 to make sure you're applying the right amount of water each week.
- During periods of unseasonably high rainfall, you should shut your irrigation system off temporarily to conserve groundwater and take advantage of the unexpected moisture. Be sure to restart your system after the rainy weather has passed. Extremely hot, dry, or windy conditions may require extra irrigation to compensate for excessive water loss from the lawn.

# MAP OF CALIFORNIA



**Region 1:** Northern California Coast

**Region 2:** Northern Inland Valleys

**Region 3:** Northeastern California Mountain Valleys

**Region 4:** Sacramento Valley

**Region 5:** San Joaquin Valley

**Region 6:** Central Inland Valleys

**Region 7:** Sierra

**Region 8:** Central California Coast

**Region 9:** Southern California Coast

**Region 10:** Southern California Inland Valleys

**Region 11:** Southern California Deserts

**Region 1: Northern California Coast**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN				
FEB				
MAR				
APR		Warm-season		
MAY		turfgrasses are		
JUN		not recommended		
JUL		in this region.		
AUG				
SEP				
OCT				
NOV				
DEC				

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	15	07	05	04
FEB	36	18	12	09
MAR	55	27	18	14
APR	67	34	22	17
MAY	88	44	29	22
JUN	97	48	32	24
JUL	95	47	32	24
AUG	90	45	30	23
SEP	76	38	25	19
OCT	48	24	16	12
NOV	32	16	11	08
DEC	21	11	07	05

**Region 2: Northern Inland Valleys**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	19	09	06	05
FEB	32	16	11	08
MAR	50	25	17	13
APR	69	35	23	17
MAY	101	50	34	25
JUN	126	63	42	32
JUL	132	66	44	33
AUG	120	60	40	30
SEP	95	47	32	24
OCT	57	28	19	14
NOV	25	13	08	06
DEC	13	06	04	03

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	25	13	08	06
FEB	42	21	14	11
MAR	67	34	22	17
APR	92	46	31	23
MAY	134	67	45	34
JUN	168	84	56	42
JUL	176	88	59	44
AUG	160	80	53	40
SEP	126	63	42	32
OCT	76	38	25	19
NOV	34	17	11	08
DEC	17	08	06	04

**Region 3: Northeastern California Mountain Valleys**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN				
FEB				
MAR				
APR				
MAY		Warm-season		
JUN		turfgrasses are		
JUL		not recommended		
AUG		in this region.		
SEP				
OCT				
NOV				
DEC				

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	17	08	06	04
FEB	34	17	11	08
MAR	59	29	20	15
APR	101	50	34	25
MAY	134	67	45	34
JUN	168	84	56	42
JUL	210	105	70	53
AUG	176	88	59	44
SEP	126	63	42	32
OCT	76	38	25	19
NOV	25	13	09	06
DEC	17	09	06	04

**Region 4: Sacramento Valley**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	19	09	06	05
FEB	44	22	15	11
MAR	69	35	23	17
APR	101	50	34	25
MAY	126	63	42	32
JUN	158	79	53	39
JUL	164	82	55	41
AUG	145	72	48	36
SEP	113	57	38	28
OCT	82	41	27	20
NOV	38	19	13	09
DEC	19	09	06	05

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	25	13	08	06
FEB	59	29	20	15
MAR	92	46	31	23
APR	134	67	45	34
MAY	168	84	56	42
JUN	210	105	70	53
JUL	218	109	73	55
AUG	193	97	64	48
SEP	151	76	50	38
OCT	109	55	36	27
NOV	50	25	17	13
DEC	25	13	08	06

**Region 5: San Joaquin Valley**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	19	09	06	05
FEB	38	19	13	09
MAR	69	35	23	17
APR	101	50	34	25
MAY	132	66	44	33
JUN	164	82	55	41
JUL	170	85	57	43
AUG	145	72	48	36
SEP	113	57	38	28
OCT	69	35	23	17
NOV	32	16	11	08
DEC	13	06	04	03

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	25	13	08	06
FEB	50	25	17	13
MAR	92	46	31	23
APR	134	67	45	34
MAY	176	88	59	44
JUN	218	109	73	55
JUL	227	113	76	57
AUG	193	97	64	48
SEP	151	76	50	38
OCT	92	46	31	23
NOV	42	21	14	11
DEC	17	08	06	04

**Region 6: Central Inland Valleys**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	32	16	11	08
FEB	44	22	15	11
MAR	69	35	23	17
APR	95	47	32	24
MAY	113	57	38	28
JUN	113	57	38	28
JUL	132	66	44	33
AUG	126	63	42	32
SEP	107	54	36	27
OCT	76	38	25	19
NOV	44	22	15	11
DEC	32	16	11	08

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	42	21	14	11
FEB	59	29	20	15
MAR	92	46	31	23
APR	126	63	42	32
MAY	151	76	50	38
JUN	151	76	50	38
JUL	176	88	59	44
AUG	168	84	56	42
SEP	143	71	48	36
OCT	101	50	34	25
NOV	59	29	20	15
DEC	42	21	14	11

**Region 7: Sierra**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN				
FEB				
MAR				
APR				
MAY				
JUN				
JUL				
AUG				
SEP				
OCT				
NOV				
DEC				

Warm-season turfgrasses are not recommended in this region.

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	31	15	10	8
FEB	43	22	14	11
MAR	79	39	26	20
APR	124	62	41	31
MAY	164	82	55	41
JUN	207	103	69	52
JUL	231	115	77	58
AUG	198	99	66	50
SEP	141	70	47	35
OCT	96	48	32	24
NOV	40	20	13	10
DEC	20	10	7	5

**Region 8: Central California Coast**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	38	19	13	09
FEB	50	25	17	13
MAR	63	32	21	16
APR	88	44	29	22
MAY	101	50	34	25
JUN	113	57	38	28
JUL	95	47	32	24
AUG	113	57	38	28
SEP	95	47	32	24
OCT	69	35	23	17
NOV	50	25	17	13
DEC	38	19	13	09

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	50	25	17	13
FEB	67	34	22	17
MAR	84	42	28	21
APR	118	59	39	29
MAY	134	67	45	34
JUN	151	76	50	38
JUL	126	63	42	32
AUG	151	76	50	38
SEP	126	63	42	32
OCT	92	46	31	23
NOV	67	34	22	17
DEC	50	25	17	13



**Region 9: Southern California Coast**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	44	22	15	11
FEB	57	28	19	14
MAR	63	32	21	16
APR	76	38	25	19
MAY	88	44	29	22
JUN	95	47	32	24
JUL	107	54	36	27
AUG	95	47	33	24
SEP	82	41	27	20
OCT	69	35	23	17
NOV	50	25	17	13
DEC	38	19	13	9

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	59	29	20	15
FEB	76	38	25	19
MAR	84	42	28	21
APR	101	50	34	25
MAY	118	59	39	29
JUN	126	63	42	32
JUL	143	71	48	36
AUG	126	63	42	32
SEP	109	55	36	27
OCT	92	46	31	23
NOV	67	34	22	17
DEC	50	25	17	13

**Region 10: Southern California Inland Valleys**

**Warm-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	42	21	14	10
FEB	57	28	19	14
MAR	80	40	27	20
APR	96	48	32	24
MAY	119	60	40	29
JUN	144	72	48	36
JUL	165	83	55	41
AUG	155	77	52	39
SEP	124	62	41	31
OCT	88	44	29	22
NOV	54	27	18	14
DEC	42	21	14	10

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in
JAN	56	28	19	14
FEB	75	38	25	19
MAR	106	53	35	27
APR	128	64	43	32
MAY	159	80	53	40
JUN	193	96	64	48
JUL	221	110	74	55
AUG	207	103	69	52
SEP	165	82	55	41
OCT	117	59	39	29
NOV	73	36	24	18
DEC	55	28	19	14

**Region 11: Southern California Deserts**

**Warm-Season Turfgrasses**

**Cool-Season Turfgrasses**

**Minutes per week to irrigate if  
your hourly sprinkler output is:**

**Minutes per week to irrigate if  
your hourly sprinkler output is:**

	0.5 in	1.0 in	1.5 in	2.0 in		0.5 in	1.0 in	1.5 in	2.0 in
JAN	54	27	18	14	JAN	65	32	22	17
FEB	75	38	25	19	FEB	90	46	30	23
MAR	121	61	40	30	MAR	145	73	48	36
APR	165	83	55	41	APR	198	100	66	49
MAY	211	106	70	53	MAY	253	127	84	64
JUN	243	121	81	61	JUN	292	145	97	73
JUL	251	126	84	63	JUL	301	151	101	76
AUG	218	109	73	54	AUG	262	131	88	65
SEP	180	90	60	45	SEP	216	108	72	54
OCT	121	61	40	30	OCT	145	73	48	36
NOV	69	35	23	17	NOV	83	42	28	20
DEC	43	22	14	11	DEC	52	26	17	13

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You'll find detailed information on many aspects of vegetable production in these titles and in other publications, slide sets, and videos from UC ANR:

*UC IPM Turfgrass Pest Management Guidelines*, publication 3365-T

*Evaluating Turfgrass Sprinkler Irrigation Systems*, publication 21503

*Healthy Turf: First Line of Defense Against Weeds*, video v94-P

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### Publication 8044

Funding for this publication was made possible through a grant from the Elvenia J. Slosson Fund,

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pr10/01-WJC/VFG

ISBN 978-1-60107-222-1



This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Environmental Horticulture.